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THE NORTH AMERICAN BEES OF THE FAMILY ANTHOPHORIDÆ.

BY T. D. A. COCKERELL.

The time is hardly ripe for a monographic revision of our Anthophoridæ. Almost every new collection that comes to hand contains undescribed species, and of many species only one sex is known. The material gathered for the Biologia Centrali-Americana, which will shortly be described by Col. Bingham, will add greatly to our knowledge.

In the meanwhile, however, it has become necessary to put the already gathered information into better order, to facilitate further progress. In 1904 I spent some time studying Smith's types at the British Museum; and in 1905 I have been able to examine types or cotypes of nearly all those described by Mr. Cresson; so that, having seen authentic material of most of the forms, it has become possible to construct tables for *Anthophora*, *Melissodes*, *Tetralonia* (*Synhalonia*), etc. These tables are now offered, together with a check list, showing the present generic position of all the species, and their distribution. I have omitted from the tables numerous species described by Mr. C. Robertson, which I have not seen; but these will be found tabulated in Trans. Am. Ent. Soc. xxxi, 365 372. The species of *Melissodes*, *Tetralonia*, etc., are all thrown together in one series of tables, a plan which will, I think, be found convenient.

It is perhaps hardly necessary to say that the groups adopted in these tables are largely artificial, intended merely to facilitate the recognition of the species. Whenever it seemed possible that a species might be looked for under more than one group, the name has been given in each, with comparative notes. In the check list, I have added the names of the principal flowers visited by the bees. In most cases these will be found to be highly characteristic; but in some instances probably not, because bees which habitually visit certain flowers may be seen occasionally on others, and the males may suck where the females would never gather pollen.

The species are for the most part strong fliers, and several are very widely distributed. On the whole, however, one is surprised at the comparatively restricted distribution of the larger number. Thus, after collecting for years in New Mexico, I examined Snow's Arizona collection, and found therein a whole series of forms which I had never seen in the former Territory. Then, again, the material from Southern California, obtained by Davidson, introduces us to still another quite distinct series. Some species range all the way from New Mexico to Los Angeles, but comparatively few. This restricted distribution is probably connected with the fact that many of the species are attached to particular flowers; and it is possible that among these ground-nesting bees the character of the soil may not be wholly unimportant.

Anthophora, Clisodon and *Tetralonia* are what might be called palæoboreal types, probably of boreal origin in ancient times, and now inhabiting both hemispheres. *Anthophora,* to day, is abundant, even in Australia ; and it is curious, as showing the persistence of an apparent trivial character, that certain of the Australian species differ in the clypeal markings just as do our *A. smithii* and *walshii.* All the other genera are strictly American, and apparently of austral origin.

In the Eucerine series there is a gradual reduction of the number of joints in the maxillary palpi, from six (*Tetralonia*) to three (*Macroglossapis*). Holmberg describes a South American genus said to be a Eucerid, in which these palpi are only two-jointed (*Melissoptila*). Holmberg's *Thygater,* with the maxillary palpi three-jointed, may prove not to be separable from *Macroglossapis;* in this case the latter name has priority, having been published in 1899 (Cat. Abejas de México, p. 14). From a remark by Mr. Schrottky, I infer that Holmberg's *Chacoana* is probably a synonym of *Epicharoides.*

ANTHOPHORA Latr.

GROUP A.

Hind part of thorax covered with very bright red hair ; rest of thorax above with black or black and grey mixed.

First abdominal segment covered with bright red hair; abdomen without tegumentary bands .... **tricolor** Lep.

Abdomen with creamy or white tegumentary bands at apices of segments. **krugii** Cress.

NOTE.—*A. tricolor* is recorded from Guadalupe and Hayti ; *A. krugii* from Porto Rico.

GROUP B.

Black species; thorax above covered with black or brown-black hair.

Large robust species, over 15 mm. long; hair of legs black, but shining white on outer side of hind tibia and basal half of first joint of hind tarsus. **carbonaria** Cress.=**infernalis** D. T.

Much smaller, less than 13 mm. long..1.

1. Femora dark chestnut (Cuba)..........................**atrata** Cress. ♂.

Femora dark chestnut, but anterior ones almost black; fifth abdominal segment covered with bright orange-fulvous hair (Nevada). **pernigra** Cress. ♀.

NOTES.—The name *carbonaria* is a homonym, so Dalla Torre proposed *infernalis*. I had been erroneously informed that *infernalis* was an *Emphoropsis*, and so was led to redescribe it as *A. corvicolor*. A comparison of descriptions indicates that *corvicolor* may possibly rank as a variety, but it certainly is not a distinct species. *A. atrata* and *pernigra* are so much alike, that were it not for the totally different localities, one might imagine them to be sexes of one species.

GROUP C.

Medium sized or large species; abdomen with tegumentary white or creamy bands.

I have given a table of this group in Bull. So. Cal. Ac. Sci., 1904, and other remarks in Canad. Entom., 1905, p. 335. I offer now my notes from the Cresson collection.

Larger; hair of thorax above fulvous, not mixed with black..................1.

Rather smaller; hair of thorax above with much black intermixed............2.

1. Clypeus of ♂ with a large quadrangular black patch on each side above (Illinois)...**walshii** Cress.

Clypeus of ♂ with very small marks above (Colorado)......**smithii** Cress.

2. Hair of thorax above except the black, mouse-grey. **marginata** Smith, and **cleomis** Ckll.

Hair of thorax above, except the black, ochracous or fulvous ....3.

3. Tegulæ of both sexes black ....**californica** Cress.

Tegulæ (♀) bright shining copper red, semi-translucent......**texana** Cress.

NOTES.

(1.) *A. marginata* and *cleomis* are not separable in the ♀. The Cresson collection contains three ♂ *marginata*, from Mexico. The British Museum has males regarded as *marginata*, but they are of two species. The ♂ *marginata* described by Dours is different from *cleomis*. My impression is, that Dours' ♂ was not the true insect, and that *marginata* and *cleomis* are really one species.

(2.) I cannot separate the females of *smithii* (from Dacota) and *walshii* (from Illinois); but the males are readily separated. Townsend's ♂ "*walshii*," recorded from Vega S. José, New Mexico, is really *smithii*. *A cardui* Ckll. differs from *smithii* in the color of the pubescence, but I now believe that it is only a variety. In the clypeal marking it agrees with *smithii*, not with *walshii*; my former statement to the contrary arose from a misunderstanding of "spots" in Cresson's account of *walshii*.

(3.) The type of *californica* is an unusually small male. The New Mexico "*californica*" (of Trans. Am. Ent. Soc., xxiv, 155) is to be referred to *texana*.

GROUP D. (Subg. nov. *Micranthophora*, type *curta*.)

Small species, less than 11 *mm. long* (*about* 11 *mm. long in* ♀ *anstrutheri*), *with grey or whitish pubescence, and no tegumentary color bands.*

Hair of thorax above black or mixed with black[*] .... 1.

Hair of thorax above without black .... 6.

1. Clypeus white in ♂, with a white apical band in ♀; eyes, dark purplish; hair of thorax above pale grey, with a moderate amount of black intermixed; size larger than *A. exigua* .... **phenax** Ckll.

Apical band or other marking of clypeus light yellow .... 2.

2. Females; apical patch of hair on fifth abdominal segment black .... 3.

Males .... 5.

3. Small; flagellum bright red beneath .... **petrophila** (Ckll.)

Larger; flagellum all dark .... 4.

4. Bases of abdominal segments nude, and appearing black; hair on inner side of basal joint of hind tarsi ferruginous .... **curta** Prov.

Bases of abdominal segments covered with hair, which is rather yellowish; hair on inner side of basal joint of hind tarsi black or brown-black. **anstrutheri** Ckll.

5. Hair of mesothorax practically all black; of metathorax white, without any black; apical band on clypeus light yellow; a transverse supraclypeal mark; anterior edge of labrum with a median process; apex of abdomen bidentate .... **exigua** Cress.

Hair of mesothorax white or whitish, with only a moderate amount of black intermixed; no supraclypeal mark .... **curta** Prov.

6. Middle tarsi enormously elongated; middle femora with apical half bright red; anterior tarsi distorted .... 7.

Legs not so .... 8.

7. Eyes green; seventh abdominal segment with a black lobe on each side. **flexipes** Cress.

Eyes yellow; pubescence whiter than in *flexipes*, and apical teeth of abdomen shorter, and not diverging at apex, as they do in *flexipes*. (Denver, Colo.) .... **albata** Cress.

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[*] The type of *A. petrophila* has the thorax denuded, so the name is given under both categories.

8. Fifth abdominal segment (♀) black, contrasting with the rest, the middle being occupied by a triangular patch of black tomentum, the sides with inconspicuous light hair; flagellum red beneath; size at least as large as *maculifrons* or *albata*........................**flexipes** Cress.

Fifth abdominal segment covered, at least over the greater part, with light tomentum, and so not contrasting with the others..................9.

9. Females..10.

Males...13.

10. Apical triangle of hair on fifth abdominal segment black.................11.

Apical triangle of hair on fifth abdominal segment fulvous or brownish...12.

11. Pubescence creamy-white; fifth abdominal segment with a *small* apical triangle of black pubescence; flagellum red beneath; face-marks cream-color ....**albata** Cress.

Face-marks decidedly yellow; face broader (California).
petrophila (Ckll).

12. Pubescence ochraceous, quite fulvous on occiput; base of second abdominal segment broadly bare and black; fifth with the apical triangle bright fulvous; flagellum very dark reddish beneath; face-marks yellow, the band on clypeus sending no streak upward in the middle line.
maculifrons Cress.

Pubescence white; base of second abdominal segment covered with hair; fifth with the apical triangle light brownish; flagellum bright red beneath; band on clypeus sending a stripe upwards in the middle line, and face-marks very pale...............................**arthuri** Ckll.

13. The two apical teeth of abdomen large, reddish, rounded at apex.........14.

The two apical teeth of abdomen reddish, but small and spine-like, not greatly larger than the dark lateral teeth; pubescence white; scape all black.................................**curta peritomæ** Ckll.

14. Pubescence pale ochraceous, not fulvous on occiput; tarsi bright red, except perhaps basal joint of hind tarsi; flagellum dark red beneath; clypeal yellow band as in ♀, sending no streak upward; lateral basal teeth of seventh abdominal segment small and dark.
maculifrons Cress.

Similar, but tarsi darker, and yellow reaching upper margin of clypeus in median line; scape yellow in front...........**flavocincta** Huard.

GROUP E. (Series 1.)

Species of rather large or large size; thorax above with conspicuous black, as well as pale, hair; abdominal bands, when present, due to hair.

Mesothorax with pale ochreous hair, but all of thorax behind level of wings with black hair; size larger than *bomboides*.......**stanfordiana** Ckll.*

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*In *A. solitaria* Rits., the hair on inner side of basal joint of hind tarsi (♀) is splendid red-golden; in *stanfordiana* this hair is dark. In Canad. Entom., 1905, pp. 313-314, Mr. Viereck erroneously credits *solitaria* to me, and in his table makes it different from *insularis*. It is, of course, the same as *insularis*, being merely a substituted name.

A large patch of black hair between the wings, but anterior part of mesothorax and scutellum, with no admixture of black; hind legs covered with black hair (Pennsylvania)...... ....**bomboides** Kirby.

The black hair interspersed among the rest, not forming a definite patch......1.

1. Abdomen with dense, entire, well-defined hair-bands....................2.

Abdomen with thin, interrupted hair-bands, or none (the species of this group are superficially very much alike)..............................3.

2. Hair-bands of abdomen fulvous (Catalina I)..............**catalinæ** Ckll.

Hair-bands of abdomen pale ochreous ....**urbana** Cress.

Hair-bands of abdomen white; larger than *urbana*, with the third antennal joint much longer..........................**washingtoni** Ckll.

3. Males..4.

Females ....6.

4. Middle tarsi with very long pure white hair, some black on first joint; face-marks deep chrome yellow.......................**pacifica** Cress.

Middle tarsi with red hair; last joint with a black fringe ....5.

5. Scutellum without any intermixture of black hair; abdomen without light bands ; upper part of clypeus black, except a small median mark.
ursina Cress.

Scutellum with black hair intermixed ; abdomen with at least traces of light bands; clypeus yellow, with two large black marks on upper part.
simillima Cress. (syn. *euops* Ckll.).

6. Very large and robust ; abdomen not at all æneous or bluish ; hair of scutellum white with no admixture of black..............**porteræ** Ckll.

Abdomen distinctly æneous or bluish ; scutellum with some black hair; third abdominal segment with some or much black hair; hair on outer side of hind tibiæ shining white....................................7.

7. Larger, size of *porteræ;* second abdominal segment with some black hairs.
ignava Cress.

Smaller; second abdominal segment with hair all white, strongly contrasting with third..8.

8. Third abdominal segment with the hair all black, except the thin (broadly interrupted) apical band......................**edwardsii** Cress.

Third abdominal segment with the hair mixed black and white throughout.
gohrmanæ Ckll.

Group E. (Series 2).

Large species ; hair of thorax above without black.

(The division of group E into series 1 and 2 is purely artificial for convenience of identification. In the case of *A. gohrmanæ*, the sexes fall in different sections.)

Males...1.

Females ....6.

1. Large; apical part of abdomen thickly covered with yellowish or fulvous hair, like the anterior part; basal joint of hind tarsi spined about the middle.....................................**occidentalis** Cress.

More than apical half of abdomen appearing black, being bare or with mainly black hair ....2.

2. Basal joint of hind tarsi spined or toothed in front......................3.

Basal joint of hind tarsi curiously bulging in front, but not spined or toothed..4.

Basal joint of hind tarsi neither spined, nor toothed, nor bulging...........5.

3. Hair of thorax and base of abdomen above very bright orange-fulvous; face broad ; face-markings cream color..................**sodalis** Cress.

Hair of thorax, etc., greyish white.......................**gohrmanæ** Ckll.

4. First abdominal segment covered with ochreous hair, which neither overlaps nor extends onto base of second segment; hair of thorax above ochraceous; face-marks light yellow; abdomen curiously narrowed apically..................................**centriformis** Cress.

Differing from typical *centriformis* in having face-marks, labrum, etc., white; tegulæ lighter and redder; abdomen beyond first segment with a good deal of fine white pile, conspicuous on margins of segments; hind margins of abdominal segments broadly whitish (Alamogordo, New Mexico, May 13, *Viereck*).......**centriformis vierecki** n. subsp.

5. Last joint of middle tarsus with an extremely broad black fringe; pubescence of thorax and base of abdomen above very bright orange-fulvous; face-marks deep chrome yellow; face very narrow..**crotchii** Cress.

Last joint of middle tarsus without such a fringe; face broader. **fedorica** Ckll.

6. Fourth abdominal segment covered with fulvous hair like the first, second and third..................................**occidentalis** Cress.

Fourth abdominal segment not covered with fulvous hair..................7.

7. Second and third abdominal segments covered with bright rufofulvous hair. **neomexicana** (Ckll.).

Second and third abdominal segments not so covered; only the first very hairy..8.

8. Abdomen black, without hair-bands, the light hair confined to first segment..9.

Abdomen with more or less evident hair-bands..........................10.

9. Hair of abdomen above all black, except the basal declivity, which has some pale hair; tegulæ black..........................**abrupta** Say.

Hair of first abdominal segment all dull white; tegulæ light ferruginous. **abruptella** Ckll.

10. Hair of thorax above fulvous; bands of fine appressed hair on second and third abdominal segments very broad...........**montana** Cress.

Hair of thorax above very pale ochreous; hair bands on second and third abdominal segments apical and narrow.............**affabilis** Cress.

NOTE.—The Chilian *A. distinguenda* Spinola, is extremely close to *A. montana.*

Anthophora simillima Cresson.

Boulder, Colorado: males at flowers of *Ribes cereum* and locoweed (*Aragallus*), April 29 (*W. P.* and *T. D. A. Cockerell*), male at flowers of *Viola nuttallii*, sucking, going to three successively (*W. P. Cockerell.*) Fort Collins, Colo., May 15, 1904. ♂ (Colo. Agr. College).

Anthophora curta Provancher.

Antonito, Colo., Aug. 5, 1900, two (*Ball*).

Anthophora porteræ Ckll.

Fort Collins, Colo. (Colo. Agr. College).

Anthophora urbana Cresson.

Fort Collins, Colo., June 27, 1903, ♀ "on yellow sweet clover" (*S. A. Johnson.*)

Anthophora smithii Cresson, form **cardui** Ckll.

Denver, Colo., July 12, 1902 (*S. A. Johnson*).

Anthophora occidentalis Cresson.

Maybell, Colo., Aug. 1, 1904, at thistle (*S. A. Johnson*); Parker, Colo. (*S. A. Johnson*).

Anthophora walshii Cresson.

Fedor, Texas (*Birkmann*).

Anthophora fedorica n. sp.—♂. Length about 16 mm.; black, the head, thorax and first abdominal segment with pale hair, not mixed with black; this hair is strongly tinged with yellowish on the head above and mesothorax, but otherwise is white or nearly so, being long and pure white on the cheeks; eyes greenish-yellow; facial quadrangle longer than broad; mandibles all dark; face markings chrome-yellow, including the labrum (except the narrow anterior edge, and a large spot at each upper corner), clypeus (except narrow anterior edge, and a large irregularly quadrangular mark at each upper corner), a narrow transverse supraclypeal band, and the lateral marks, which end narrowly on orbital margin about the level of antennæ; scape yellow in front, flagellum entirely black; tegulæ ferruginous; wings clear, with a ferruginous stain in upper part of first submarginal cell; abdomen shining black, the hind margins of the segments dark reddish; no hair bands; the second segment beyond the middle, the third and fourth, and the base of the fifth and sixth have short erect black hair; hair about apex white; apical plate broad; legs (including the tarsi) black, with mainly white hair; long hair of middle tarsi black and white mixed; basal joint of hind tarsi neither distorted nor spined or toothed.

Hab.—Fedor, Texas, April 29. (*Birkmann.*) Looks something like a pale example of *A. montana*, but is easily separated by the dark markings of the clypeus and the much broader apical plate, as well as the abundant black hair on the middle tarsus. From *A. crotchii* it is known by its broader face, dark markings of clypeus, and absence of any broad black brush at end of middle tarsus. The clypeal marking resembles that of *A. simillima*, but that differs greatly in the legs, etc.

Anthophora flavocincta Huard. ♂.

This is *A. nigrocincta* Provancher; the name being a homonym, it was changed to *flavocincta* by Huard (Nat. Can., Feb., 1897, p. 25). I have a male, collected in California by Dr. Davidson, and had formerly recorded the species as *A. maculifrons*, to which it is certainly very closely allied. I have now seen the types of *maculifrons*, and find *flavocincta* to differ by the darker tarsi, and the yellow reaching the upper margin of the clypeus in the median line; the apical teeth of the abdomen are about as in *maculifrons*. The female from Bear Valley, Calif., which I had associated with the above male, proves to belong to *A. flexipes;* the second submarginal cell is much broader below in *flavocincta* than in *flexipes*, and the males, of course, have the legs entirely different.

Anthophora petrophila (Ckll.) ♀.

This was described as *A. maculifrons petrophila*, from Rock Creek, Calif. It has the small apical triangle of hair on the fifth abdominal segment dark, and is really nearer to *albata*, of which it may be considered a Californian representative. It differs from *albata* by the decidedly yellow (not creamy) clypeal band, and also the broader face. It is easily known from *A. curta* by the red flagellum.

Anthophora anstrutheri n. sp. (possibly **flavocincta** ♀).—♀. Length about 11 mm.; black, with abundant pale mouse-grey pubescence, which on abdomen forms a dense felt-like surface, speckled with minute black (hairless) dots, but not failing at the bases of the segments, and so without any appearance of black bands; hair of vertex, mesothorax and scutellum with a moderate amount of black intermixed; apical patch of hair on fifth abdominal segment black and rather large; small joints of tarsi reddish; antennæ black; eyes greenish yellow; apical clypeal band chrome yellow, broad, not sending any process upwards; a small transverse supraclypeal mark; tegulæ pale reddish; hair on inner side of basal joint of hind tarsi black.

Hab.—Los Angeles, California (*Dr. Anstruther Davidson*). Allied to *A. curta* Prov., but larger, with the basis of the abdominal segments not dark, and the abdominal hair slightly yellowish; the mandibles also are deeply bidentate, with the inner tooth large. The color of the hair on the inner side of the hind tarsi is also quite different. From *A. flexipes* it is easily known by the fifth abnominal segment having only a black apical patch, instead of being all black; also by the black hair on vertex, and the absence of an upward extension of the yellow clypeal band. From *A. albata* it is known by the yellowish abdominal pubesence, larger size, etc. It is perhaps not impossible that it may be the undescribed male of *A. flavocincta*, but there is no proof that this is the case.

Anthophora arthuri n. sp. (or **albata** var. ?).

At Maybell, Colorado, Aug. 1, 1904, Mr. S. Arthur Johnson took two females of *Anthophora* on yellow flowers of the family Compositæ. I referred one to *A. albata*, as it greatly resembled Cresson's figure of that insect, and the other I called *albata*, variety. An examination of the type of *A. albata* shows that the supposed variety is the true insect, while the supposed typical example appears to represent another species, to which the name *A. arthuri* may be applied. This *A. arthuri* differs from *albata* in being somewhat larger and stouter, but particularly in having the apical triangular patch of the fifth abdominal segment large, and pale greyish brown. The face markings are very pale (as in *albata*), and there is an upright band reaching the upper edge of the clypeus. The mesothorax is densely clothed with white hair, no black being intermixed. The spurs are considerably darker than in *albata*. The flagellum is ferruginous beneath It may be that this is only a variety of *albata*, but it seems best to treat it as a distinct species in the absence of proof to the contrary.

Anthophora abruptella n. sp.— ♀. Similar to *A. abrupta*, but decidedly smaller and narrower (width of abdomen 5½ mm., in *abrupta* 6); legs dark ferruginous; clypeus with finer and much closer punctures; eyes yellowish; tegulæ light ferruginous (black in *abrupta*); hair of pleura, except the upper part, black; hair of first abdominal segment all dull white; rest of abdomen practically bare, with a small amount of black hair, the hind margins of the segments obscurely pallid.

Hab.—Los Angeles, California (*Davidson*). I intended at first to treat this as a subspecies of *abrupta;* but it is so far removed geographically, and the characters, though few, are so distinctive, that I describe it as a distinct species.

CLISODON Patton.

Clisodon terminalis (Cresson).

Steamboat Springs, Colo., Aug. 8, 1904. ♀ (*S. A. Johnson*). The pubescence is much more orange than in the New Mexico form.

ENTECHNIA Patton.

Entechnia grisella Ckll. and Porter.

Rocky Ford and Denver, Colo. (*S. A. Johnson*). Mr. Johnson took both sexes, and *E. dakotensis*, C. & P., is the female of *grisella.* Wallace County, Kansas, 3,000 ft. (*Snow*, 839).

CENTRIS Fabr.

Centris mexicana Smith.

Cuernavaca, Mexico, Aug. 1898. (Colo. Agric. College).

The neotropical species of *Centris* are wonderful bees, including such striking types as the following:

Abdomen red (*Rhodocentris* Friese).
Large species.. **montezuma** Cress.
Small species..**totonaca** Cress., **fulviventris** Cress. and **dentipes** Sm.
Abdomen with broad yellow (tegumentary) bands (*Pœcilocentris* Friese).
fasciata Sm. (**fasciatella** Friese) and **eisenii** Fox.
(Friese puts *morsei* in this group, but its affinities are all with the *nitida* group of *Melanocentris.*
Abdomen blue or green, apex red (*Cyanocentris* Friese).
hæmorrhoidalis Fabr.
Abdomen black, without light hair at base (*Melanocentris* Friese).
æthiops Cress.

The subgeneric names given by Friese do not take into account the earlier (1807 and 1810) names given by Klug.

DIADASIA Patton.

D. afflicta (Cress.), *D. australis* (Cress.) and *D. enavata* (Cress.) all occur at Fedor, Texas (*Birkmann*). For a table to separate the species of this genus, see American Naturalist, Oct., 1905.

D. nitidifrons Ckll.—A ♂ collected by Dr. H. Skinner at Silver Lake, Wasatch Mts., Utah, 8,600 ft., July 14, greatly extends the range. This species is near *D. afflicta*, but much smaller, with very narrow second s. m., and hair on inner side of basal joint of hind tarsi red. When fresh the abdomen is quite hairy, and there is short black hair at bases of segments 2 and 3.

XENOGLOSSA Smith.

Xenoglossa brevicornis (Cresson).

Fedor, Texas, June 20, 1898 (*Birkmann*).

Xenoglossa pruinosa (Say).

Arizona, Aug., 1902 (*Snow*, 425).

Xenoglossa patricia angustior Ckll.

Congress Junction, Arizona, July (*Snow*, 1008).

DASIAPIS Ckll.

Dasiapis ochracea Ckll.

Oak Creek Canon, Arizona (*Snow*, 2005).

MELISSODES and allies.

MALES.

GROUP A.—Clypeus black.

SERIES 1.—Labrum yellow or cream color = *Macroglossapis* Ckll.

Labrum cream color; antennæ very long, flagellum fulvous beneath; thorax with fulvous pubescence, black anteriorly; abdomen shining black, without bands; clypeus longitudinally carinate; maxillary palpi 3-jointed............**Macroglossapis montezuma** (Cress.).

(The ♀ of *M. montezuma* has the pubescence of thorax above fulvo-ferruginous, black in front like ♂; of pleura also black; clypeus carinate; pubescence of legs black, ferruginous on inner side of anterior tarsi.)

Melissodes albilabris Cress., also falls here, and is to be called *Macroglossapis albilabris;* the type shows the 3-jointed maxillary palpi well. This species has the hind margins of the abdominal segments very broadly yellowish, with shining golden hairs—a very pretty effect.

The type of *Macroglossapis* is *oribazi* Rads., which Friese says is a synonym of *analis* (Lep.); other species have been described by Smith. The following characters are useful for the separation of the males of this genus.

M. terminata (Sm.) Hair of thorax above cinereous; labrum yellow.

M. albilabris (Cress.) Hair of thorax above with a band of fuscous across anterior part, and some fuscous on scutellum.

M. montezuma (Cress.) Hair of thorax fulvous, black in front; labrum yellowish-white.

M. modesta (Sm.) Hair of thorax above wholly pale fulvous; labrum yellowish-white.

M. analis (Lep.) Hair of thorax whitish; but if *oribazi* is the same, it is black in the ♀.

M. rubricata (Sm.) Male unknown, but no doubt has a reddish abdomen, like the ♀.

SERIES 2.—Labrum black.

Antennæ very long, entirely black, strongly crenulate. **Tetralonia hirsutior** (Ckll.).

Antennæ with flagellum fulvous or ferrugiuous beneath ....**Melissodes** spp.

In Entomologist, July, 1902, p. 177, I have given a table to separate the species of *Melissodes* falling in this series; since then one species (*M. semitristis* Ckll., from Arizona) has been added. The following notes will be useful:

M. tristis Ckll. Mandibles with no yellow spot.

M. sphæralceæ Ckll. Mandibles with a yellow spot; sides of apical part of abdomen with three teeth, but middle tooth not nearly as large as in *intorta*.

M. intorta Cress. Antennæ not half as long as in *tristis;* hind margins of abdominal segments narrowly dull white; three teeth on each side of apical part of abdomen, the middle one very large, and peculiarly formed; palpi seem normal for *Melissodes;* abdomen not banded.

M. personatella Ckll. Antennæ very long; flagellum ferruginous beneath; mesothorax with black hair. Length 10 mm.

M. semitristis Ckll. Stature of *M. menuacha*, but black clypeus and broader face of *tristis*.

The two following species are not strictly of this group, but they should be compared with it:—

M. prœlauta Ckll. Looks like *semitristis*, but clypeus greyish-white, face narrowed below, eyes black, pubescence pure white on head and mesothorax (Arizona).

M. hexacantha Ckll. Also from Arizona. Clypeus black with a yellow band in front; antennæ not nearly so long as in *tristis;* lateral spines of end of abdomen six (instead of the usual four). Differs at once from *Xenoglossa angelica* by the black tegulæ, and scuttellum with black hair; by the same tokens it also differs from *X. pruinosa*.

M. hexacantha is quite variable, as follows:—

Var. a.—Thorax above without black hair, except half a dozen or less on mesothorax; hair of abdominal segments 5 and 6 black.

Var. b.—Lower half of clypeus yellow, and a yellow process directed upwards in middle line.

Var. c.—Yellow of clypeus much reduced.

GROUP B.

Clypeus light; labrum dark, wholly or partly.

(In *intrudens, snowi, dentiventris* and *vernonensis* the labrum has a large yellow or light spot.)

SERIES 1.—Flagellum dark, not red beneath.

Abdomen beyond middle of second segment black, with long black hair, and no light hair or bands; lateral margins of yellow of clypeus not notched. **Tetralonia intrudens** (Cress.).

(See also *Tetralonia actuosa* Cress., peculiar for the ventral teeth or keels near apex of abdomen. The northern form of *actuosa* recorded by Viereck appears to differ a little, in that the first r. n. joins the second s. m. at middle, whereas in typical *actuosa* it joins it about or even beyond the beginning of the last third.)

Abdomen beyond middle of second segment with pale hair, and more or less evidently banded..........1.

1. Upper part of clypeus black; flagellar joints with light dots beneath. **Melissodes microsticta** Ckll.

Upper part of clypeus not black; flagellar joints without light dots beneath..2.

2. Larger; pubescence of thorax above fulvous; hind margins of abdominal segments not hyaline..........**Tetralonia honesta** (Cress.).

Smaller; pubescence of thorax above pallid, with a yellowish tint; hind margins of abdominal segments broadly hyaline. **Melissodes confusa** Cress.

Smaller than *confusa;* abdomen not conspicuously banded; middle and hind tarsi remarkably long and slender, which distinguishes it at once from *microsticta* or *confusa* (Arizona)..........**M. tenuitarsis** Ckll.

SERIES 2.—Flagellum more or less red beneath (all *Melissodes.*)

Scutellum without black hair..........1.

Scutellum with black hair (only a little in *otomita*); hair on inner side of basal joint of hind tarsi pale or ferruginous..........3.

1. Hair of thorax snow-white; nervures honey color..........**M. snowi** Cress.

Larger than *snowi;* hair of mesothorax snow-white, of scutellum yellowish; clypeus greyish white; labrum black, with a large light spot (Arizona). **M. prælauta** Ckll.

Smaller than *snowi* or true *agilis* (*snowi* and *agilis* are the same size), and distinguished by pubescence ochreous tinted (as in *agilis*), and labrum entirely black (in *snowi* it has a very large yellow spot); eyes light green. Very much smaller and quite different from *rivalis* (Colorado, Arizona)..........**M. agilis subagilis** Ckll.

Hair of thorax ochreous..........2.

2. Abdomen without pale hair bands; hair on inner side of b. j.* black. **desponsa** Sm.

Abdomen with pale hair bands; hair on inner side of b. j. ferruginous. **rivalis** Cress.

3. Hair of thorax whitish or cinereous and black..........4.

Hair of thorax ochreous and black..........7.

4. Antennæ comparatively short; small species; hind margins of abdominal segments 2-5 broadly covered with bright orange-fulvous hair. **otomita** Cress.

Antennæ long; larger species..........5.

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* "b. j." in these tables means basal joint of hind tarsi.

5. Abdominal segments 3–5 practically covered with pubescence; labrum with a very large yellow spot.................. **vernonensis** (Viereck).
Abdominal segments 3-5 with the surface exposed, except at the bands.....6.
6. Larger; abdomen duller, more banded and more punctured **fimbriata** Cress.
Smaller; abdomen shinier, less banded and less punctured. **perplexa** Cress.
(In *fimbriata* the hair on exposed part of abdominal segments 4 and 5 is black.)
7. Smaller; hind margins of abdominal segments black; antennæ long (Cuba). **mimica** Cress.
Larger; hind margins of abdominal segments hyaline ....8.
8. Black hair of thorax almost or quite confined to scutellum; tegulæ without black hair ....**gilensis** Ckll.
Mesothorax with a good deal of black hair; tegulæ with black hair. **grindeliæ** Ckll.

NOTES.

(1.) *M. desponsa* Sm., det. Cresson, has the labrum black with a round yellow spot; scape black; flagellum red beneath; upper edge of clypeus fringed with dark hairs. *M. cnici* Rob., has the same characters except that it seems larger, and the labrum lacks the yellow spot.

(2.) *M. confusa* Cress., has the labrum all black; flagellum all brown-black, with raised longitudinal lines; clypeus with black spot on each side; abdomen with pale hair-bands.

(3.) *M. otomita* Cress., has a light spot on mandibles.

(4.) *M. fimbriata* Cress., has the hair bands and b. j. of *rivalis;* but in *rivalis* the hair of thoracic dorsum is pale ochreous; while in *fimbriata* it is dull white, and black in the middle, and the abdomen of *fimbriata* is more hairy.

(5.) *M. perplexa* Cress., has the labrum all black, and the clypeus cream colored, with the upper part largely black; while *M. manipularis* Sm., has the labrum with a large yellow spot, and the clypeus yellow. Both species occur in Georgia.

(6.) The labrum has more or less black at sides in *M. menuacha M. agilis* and the Cuban *Florilegus lanieri.*

GROUP C.

Clypeus and labrum light; thorax above with conspicuous black or fuscous hair, at least on scutellum. (In *M. coloradensis* there are only a few dark hairs; the black hair could not be called conspicuous.)

Scape entirely clear ferruginous; legs all red; robust species, with antennæ only of moderate length ....**Melissodes texana** Cress.
Scape dark brownish or black (*Melissodes*).......................................1.

1. Apical half of abdomen black, without conspicuous (if any) light markings; large species; antennæ of moderate length ....2.
   Apical half of abdomen with conspicuous light bands or markings due to hair, or entirely fulvous ....3.
2. Hind legs with ferruginous hair........................**comanche** Cress.
   Hind legs with black hair ....**caliginosa** Cress.
3. Abdomen with the general color light fulvous ....4.
   Abdomen black, with a whitish hair band on segment 4, and whitish patches at sides of 3; hair of apex rufous ....**coloradensis** Cress.
   Abdomen with conspicuous whitish hair bands on segments 2–4............5.
4. Larger; abdomen all fulvous, except a darkening at the bases of segments, due to tegument showing through...............**townsendi** Ckll.
   Smaller; abdomen with the base sparsely haired and appearing black, and the hair of the apical segment black ....**montana** Cress.
5. Hair of abdominal venter and inner side of b. j. dark fuscous or black. **obliqua** Say.
   Hair of sides of abdominal venter white, of inner side of b. j. ferruginous...6.
6. Face narrower; tegulæ light reddish; abdominal bands very broad. **suffusa** Cress.
   Face broader ....7.
7. Tegulæ dark; abdominal bands narrow; mesothorax with much black hair. **communis** Cress.
   Tegulæ red; larger than *communis* (but var. a. has stature of *communis*); thorax with little dark hair, and that on scutellum; wings strongly yellowish (Kansas) ....**hortivagans** Ckll.

NOTE.—The following should also be compared:

(1.) *M. vernonensis* (Viereck), a form from Vernon, British Columbia, regarded by Viereck as a race of *M. menuacha.* It is covered with dull white hair; abdomen very hairy; tegulæ dark, covered with light hair; labrum black, with a very large yellow spot.

(2.) *M. duplocincta* Ckll., from Arizona, with appearance of *Tetralonia lippiæ.* It has five bluish white bands on abdomen; upper lateral corners of clypeus black; tegulæ light fulvous. A much more slender species than *suffusa,* with the pubescence an entirely different color.

(3.) *M. parosetæ* Ckll., from New Mexico. Smaller than *duplocincta;* tarsi red; pubescence of thorax in front light fulvous; clypeus all yellow, except a black spot on each side.

GROUP D.

Clypeus and labrum light; thorax above without dark hair; hair of hind legs black or fuscous (more or less pallid in *georgica*)*; abdomen not strongly banded, its apex with black hair.*

Tegulæ dark; hair of third abdominal segment mixed black and white.
Melissodes atrifrons Sm.

Tegulæ light fulvous ....1.

1. Larger ....**M. (Epimelissodes) atripes** Cress.
Smaller ....**M. georgica** Cress.

Group E.

Clypeus and labrum light; thorax above without dark hair; flagellum all dark (mostly *Synhalonia*).

Mandibles with a large light spot; last joint of flagellum acuminate, curved and pointed ....1.

Mandibles without a light spot, or (in *lepida*, *snoviana* and *fedoris*) with a very small one ....2.

1. Abdominal hair bands broad and dense, pale ochreous..**nevadensis** Cress.
(The supposed *nevadensis* from Las Cruces, New Mexico, as shown by the specimens in collection Amer. Ent. Soc., is not that species at all. It has black hairs on scutellum, and runs near *obliqua*.)
Abdominal hair bands less developed.......**Anthedon compta** (Cress.).
(The range of *compta* is unexpectedly extended by a male taken by Prof. C. P. Gillette on Cheyenne Mountain, near Colorado Springs, Colo., July 9, 1905.)

2. Abdomen covered with fulvous hair ....3.
Abdomen without such hair (*Tetralonia*)..................................4.

3. Smaller; abdomen redder; second t. c. nearly straight; hair of cheeks and pleura pale fulvous...........**Tetralonia fulvohirta** (Cress.).
Larger; abdomen not so red; second t. c. with a double curve; hair of cheeks and pleura white..................**Melissodes herricki** Ckll.

4. Apical part of abdomen black, with dark hair ....5.
Apical part of abdomen with light hair; yellow of clypeus notched at sides..8.

5. A tuft of white hair just in front of apical plate; yellow of clypeus deeply notched laterally; middle tarsi peculiar...**T. fulvitarsis** (Cress.).
No tuft of white hair at apex ....6.

6. Upper lateral borders of clypeus black, the yellow not notched; hind spurs normal...............................**T. atriventris** (Sm.).
Yellow of clypeus more or less notched or concave at sides ....7.

7. Hair of thorax above light fulvous.
T. edwardsii (Cress.); syn. *angustior* Ckll.
Hair of thorax above very pale ochraceous; apical two segments of abdomen with most of the hair reddish, some hairs on penultimate segment shining coppery; basal joint of middle tarsus curved; differs conspicuously from *edwardsii* in having hair of second abdominal segment wholly pale...........................**T. californica** (Cress.).

8. Hind spurs of hind legs twisted and hooked.
T. dilecta (Cress.) = **speciosa** auctt. (not Cress.).
Hind spurs normal ....9.

9. Smaller; mesothorax shining and strongly punctate; pubescence yellower than in *frater*...............................**T. lepida** (Cress.).
Larger...10.

10. Hair of thorax and first abdominal segment bright fulvous.
T. astragalina (Ckll.).
Not thus brightly colored ....11.
11. Mesothorax dull and granular; pubescence paler than in *lepida*.
T. frater (Cress.).
Mesothorax shining and punctate (Kansas).
T. gillettei snoviana (Ckll.).
(See also *T. fedoris* Ckll. and *T. birkmanniella* Ckll.)

NOTES.

(1.) *T. intrudens* (Cress.) differs from the above by having the labrum dark, with a large yellow spot.

(2.) *T. territella* Ckll. may be looked for under 5; it, with the Californian *T. actuosa* (Cress.) form a little group distinguished by having ventral subapical teeth on abdomen, and the mesothorax dull. They are distinguished as follows:

T. territella: labrum all light; margins of clypeus not black; thin whitish hair bands on abd. s. 5 and 6; rather small, pubescence all dull white.

T. actuosa: labrum black, with a large yellow spot; margins of clypeus black; thin hair band on sixth abd. s. fulvous, and more on fifth.

GROUP F.

Clypeus and labrum light; thorax above without dark hair (a few dark hairs in *coloradensis*); *flagellum red or fulvous beneath* (mostly *Melissodes*).

Rather large; abdomen black, with hair bands on 4 and 5, and patch on each side of segment 3; mandibles with a yellow spot.
M. coloradensis Cress.
Abdomen not so marked; when bands are developed, the band on third segment continuous...1.
1. Hair of thorax above white ....2.
Hair of thorax above fulvous (very pale yellowish in *plenacoides*) ....4.
2. Tegulæ dark; eyes green; nervures fuscous............**M. lupina** Cress.
Tegulæ light; eyes greyish or reddish ....3.
3. Abdomen covered with short white tomentum.
Xenoglossodes albata (Cress.).
Abdomen with very thin loose pubescence; hind margins of segments very broadly hyaline; nervures light ferruginous......**M. agilis** Cress.
4. Larger; about 14 mm. long; hair of abdomen pale fulvous.
M. menuacha Cress.
11–13 mm. long; hair of thorax above fulvo-ochraceous; last three abdominal segments with black pubescence.
M. comptoides Rob. (from description).
Smaller; less than 12 mm. long; apical part of abdomen 4 spinose ....5.

5. Hair of fifth abdominal segment all black; even at sides (Texas).
M. galvestonensis Ckll.
Hair of fifth abdominal segment black, except at extreme sides............6.
Hair of fifth abdominal segment at least partly light on disc..............7.
6. Wings paler; second submarginal cell smaller........**M. tepaneca** Cress.
Wings darker; second submarginal cell much larger; otherwise same, and perhaps only a race of *tepaneca* ....**M. kallstrœmiæ** Ckll.
Like *kallstrœmiæ*, but pale yellowish (not white) hair of thorax above, and the white (instead of pale fulvous) hair bands of abdomen.
M. kallstrœmiæ phenacoides Ckll.
7. Middle and hind legs dark or rather light ferruginous; abdomen with metallic tints (Cuba)......................**Florilegus lanieri** (Guér.).
(*F. condigna* Cress., syn. *palustris* Rob. also runs here, and is scarcely to be separated.)
Middle and hind legs black ....8.
8. Subapical spines of abdomen red; hind margins of abdominal segments black.
"**M. pennsylvanica** Lep. ?" in coll. Amer. Ent. Soc.
Subapical spines of abdomen black; hind margins of abdominal segments whitish ....**M. aurigenia** Cress.

NOTE.—The above "*pennsylvanica*?" does not agree well with Lepeletier's description, which states that the clypeus is "blanc sale," hair of head and thorax ashy red, lower borders of abdominal segments *largely discolored with reddish,* nervures pale red. Robertson thought he recognized *M. pennsylvanica*, but later concluded that there was no proof of identity, and described his species as *M. trinodis* Rob.

FEMALES.

GROUP G.

Pubescence of thorax above all, or nearly all, black; of pleura also black.

Pubescence of face below antennæ white or whitish ....1.
Pubescence of face below antennæ black.................................. ..2.
1. Smaller; a large white patch on each side of fourth abdominal segment (Mexico) ....**M. atrata** Smith.
Larger; abdomen without white patches ....**M. caliginosa** Cress.
2 Very large and robust, about 22 mm. long; abdomen, except base, covered with a felt-like fulvous tomentum...**Xenoglossa gabbi** (Cress.).
Much smaller; 11 mm. long or less; abdomen with black pubescence.......3.
Not quite so small; 12 mm. long: entirely black, with black pubescence; abdomen shining, nearly naked (Cuba)...............**M. maura** Cress.
3. Larger; fourth abdominal segment with a large white patch on each side.
M. bimaculata Lep.
Smaller; fourth abdominal segment with no white patches (Cuba).
M. pullata Cress.
(For a more extended table of the *bimaculata* group, see Canad. Entom., July, 1905, p. 266.)

NOTES.

(1.) *Melissodes raphaelis* Ckll. is to be compared with *atrata.* It differs by having the pubescence of thorax above partly grey: patches on fourth abdominal segment yellowish; pubescence of pleura partly grey and partly black.

(2.) *M. morosa* Cress., from Mexico, may also be compared with *atrata.* It is about 12½ mm. long; thorax clothed with short dense black pubescence, with a slight admixture of ochraceous on prothorax and mesothorax; head with ochraceous pubescence, mixed with black on vertex and occiput; abdomen with ochraceous markings, including broad apical margins of segments 3 and 4, and oblique lines on sides of 2; legs with short black pubescence; posterior tibiæ and tarsi with long yellow pubescence; hair fuscous on tarsi within.

(3.) *Xenoglossa apiculata* (Cress.) differs at once from *M. caliginosa* by having abdomen beyond second segment covered with orange-red hair, and hair on hind legs all black or brown-black; hair of thorax brown-black, but sides of mesothorax, especially above and behind tegulæ, have ochreous hair, quite pale; hair of face and front pale ochreous.

From *X. gabbi* it differs thus:

Larger; red of abdomen covering second segment................**gabbi** Cress.
Smaller; red of abdomen not covering second segment......**apiculata** Cress.

GROUP H.

Pubescence of thorax above not at all black, or if so, of pleura not black; abdomen black, without bands, or with only traces of them; hair of apex black, without light markings.

Base of abdomen without light hair; vertex shining; pubescence of thorax ochraceous, short and dense; hind tarsi with long black hair; wings strongly smoky ....**Emphor bombiformis** (Cress.).
Base of abdomen with more or less light hair ....1.
1. Hair of hind tibiæ and tarsi wholly black or dark purplish fuscous ....2.
Hair of hind tibiæ at least largely pale, whitish or reddish ....4.
2. Hair of vertex and thoracic dorsum all ochraceous; base of second abdominal segment with pale hair; large species, about 16 mm. long; wings fuliginous........ **Melissodes (Epimelissodes) atripes** Cress.
Hair of vertex black; of pleura also black; base of second abdominal segment without pale hair ....3.
3. Larger; hair of face black, of mesothorax in front ochreous, with at most the edge black haired; clypeus not carinate.
M. atrifrons Sm. = **carolinensis** D. T.

Smaller; about 12½ mm. long; hair of face mixed black and greyish; anterior half of mesothorax black haired, hind part with fulvous hair; clypeus longitudinally carinate **Macroglossapis montezuma** (Cress.).

4. Ventral surface of thorax with light hair; legs without black hair.
Melissodes dubitata Cress. (= **Tetralonia atriventris** fide Rob.).

Ventral surface of thorax with black hair; hair of legs black, except on hind tibiæ and base of their tarsi; a concave shining space on each side of ocelli.....................**M. cnici** Rob. = **desponsa** Sm., Cress.

NOTE.—*Melissodes epicharina* Ckll., from Arizona, might run to *dubitata*, but it is quite different by having an entire, conspicuous hair band, creamy in color, on second abdominal segment. Thorax above with much black hair.

M. epicharina var. *a*, has eyes green, and two abdominal bands, the extra one being at base of second segment.

GROUP I.

Pubescense of thorax above not all black, or if so, of pleura not black; abdomen not black without bands, and the apical part not all black.

Abdomen covered with white tomentum; small species.
Xenoglossodes albata (Cress.).

(The only species which could be confused with this is *Melissodes stearnsi* Ckll., which is easily distinguished by the dark tegulæ, ochreous hair of front of thorax, etc.)

Abdomen not so covered...1.

1. Last two segments of abdomen covered with black or dark fuscous hair, except sometimes at extreme sides*....... ....2.

Last two segments of abdomen with the hair not, or not all (except extreme sides) black or fuscous....................................GROUP N.

2. Hair of anterior and middle legs black, ferruginous on inner side of tarsi, large species, about 17 mm. long, robust, with hair of scutellum and hind part of mesothorax black............**Melissodes obliqua** Say.

(Compare here the following:

M. coloradensis Cress. has hair of thorax above colored as in *obliqua*, but it is a smaller species, and hair of anterior and middle legs is fulvous.

M. comanche Cress. has hair of thorax above colored like *obliqua*, but hair of segments 5 and 6 is largely brown, and hair of anterior and middle legs is reddish. It has the size of *obliqua*.

M hortivagans Ckll., var. *a*, has hair of anterior and middle legs nearly all black, but is much smaller than *obliqua*.)

Not so..3.

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* *Florilegus condigna* Cress., *Tetralonia belfragei* (Cress.) and *T. cressoniana* Ckll., might, perhaps, be looked for here, but they show too much white at sides of segment 5. They are placed in the table with this reservation.

3. Hair of thorax above without black.................................Group J.
   (In *M. hewetti* Ckll., with very few dark hairs; in *dentiventris* with a small patch of dark hairs on scutellum.)
   Hair of thorax above with black (very little in *hewetti* and *dentiventris*).
   Group L.

Group J.

Hair of thorax above without black.

Hair on inner side of basal joint of hind tarsi ferruginous....................1.
Hair on inner side of basal joint of hind tarsi black or dark fuscous..Group K.
1. Abdomen with four white clean-cut bands; smaller than *belfragei* (Texas).
   Tetralonia cressoniana (Ckll.).
   Abdomen with three wide clean-cut white bands on a black ground; sides of fifth segment with white hair..............**T. belfragei** (Cress.).
   (*T. lata* (Prov.) is close to this, but with white bands only on segments 3 and 4, segment 2 being all black.)
   Abdomen with three wide greyish white or pale grey bands; sides of 5 with a light marginal patch........**T. cordleyi** Viereck (cf. also *donata*).
   Abdomen not so ornamented..2.
2. Larger and more robust...3.
   Smaller and less robust..4.
3. Light hair of fourth abdominal segment white.
   Melissodes thelypodii Ckll.
   Light hair of fourth abdominal segment pale fulvous....**M. hewetti** Ckll.
4. Anterior middle of scutellum with the shining surface showing, though thinly pubescent, posterior part and sides densely covered with fulvous hair; pale hair on abd. s. 2 and 3 pale ochreous........................5.
   Scutellum nearly all hidden by fulvous pubescence; light hair of abdominal segments 2–4 all pale ochreous or pale fulvous.
   M. aurigenia Cress.
5. Pale hair of abd. s. 4 pale ochreous, but white on hind margin; flagellum not so dark, and pleura not as in *galvestonensis*.....**M. tepaneca** Cress.
   Hair of abd. s. 4 all white; lower part of pleura in front with black hair (Texas)..............................**M. galvestonensis** Ckll.
   (At Fedor, Texas, May 27, 1901, Mr. Birkmann took a form of *M. galvestonensis* having the black hair on lower parts of thorax reduced, and scarcely differing from *tepaneca*. It has the flagellum colored as in *galvestonensis*, and the hair at apex of abdomen (as in type *galvestonensis*) is perfectly black, whereas in *tepaneca* it is strongly suffused with red. The punctures extend over much more of the metathoracic area than in *tepaneca*.)

NOTES.

(1.) *Tetralonia lippiœ* (Ckll.) may be looked for in this group. It has a subspecies *semilippiœ*, concerning which see Proc. Biol. Soc. Wash., xviii, p. 179.

(2.) *Anthedon compta* (Cress.) comes in this series. Thorax with dense short fulvous pubescence; legs with dark fulvous pubescence, black on basal joint of anterior tarsi. The above is from the description of Cresson, which makes no explicit reference to the hind tarsi ; but I examined the type, and found that they have the hair red.

(3.) From the description, *Melissodes tepida* Cress., from Nevada, comes in this group. It has the abd. segments 2–4 almost entirely covered with short, dense, pale, appressed, ochraceous pile, and has a patch of pale pubescence on each side of segment 5.

(4.) *Melissodes donata* Cresson (type examined) is from Mexico, and runs to *Tetralonia cordleyi* fairly well in the table; the fifth abd. s. appears black, with the marginal fringe dark chocolate, contrasting, and the hair of apical segment is dark chocolate. Segments 2 to 4 have broad, even marginal bands of light cinereous tomentum; the mesothorax is dullish but very strongly and closely punctured, and it has erect fuscous hair ; flagellum a sort of sepia brown beneath. Apparently close to *T. actuosa* (next to which it is placed in the Cresson collection); it differs principally from *actuosa* by the much coarser sculpture of mesothorax, and the smaller size. I have not seen the palpi, but I think the species may be safely written *Tetralonia donata.*

GROUP K.

Hair on inner side of basal joint of hind tarsi black or dark fuscous.

Abdomen shining black, with only one white hair band, which is on fourth segment, but a white spot on each side of third ; flagellum all black. **Tetralonia acerba** (Cress.).

Abdomen not thus ornamented ; bands two or more, though sometimes weak..1.

1. Eyes green ; flagellum fulvous beneath ; thorax above with fulvous pubescence ; abdominal bands white, as broad as the black intervals between them...**Melissodes** (**Martinella**) **luteicornis** Ckll.

Eyes not green, or if greenish, then pubescence of thorax not fulvous ......2.

2. Pubescence of thorax above deep fulvous ; size moderate ; species of E. States. **M. dentiventris** Smith.

Pubescence of thorax above pale ochreous, or greyish ; mostly larger, robust species, all of the W. States ....3.

3. Basal declivity of first abdominal segment with sooty hair ; very large and robust species ....**M. chrysothamni** Ckll.

Basal declivity of first abdominal segment without sooty hair ; species not so large, though *M. mizeæ* is nearly as large..........................4.

4. Hair on inner side of hind tibiæ black or dark fuscous ; middle of mesothorax nude, with sparse but strong punctures ; smaller species ....5.

Hair on inner side of hind tibiæ light ; larger species ....6.

5. Eyes pale grey-green ; pubescence of thorax greyish white.
M. glenwoodensis Ckll.

Eyes brown ; pubescence of thorax slightly yellowish ; abdominal bands better developed.......**"M. menuacha** Cress." (a Colorado specimen so labelled in the Cresson collection, but not the species usually recognized as *menuacha*).

6. Abdomen broader, with very broad bands ....**M. mizeæ** Ckll.

Abdomen narrower, with narrow bands ....**M. blakei** Ckll.

The two following may also be compared here, but they are smaller species:

Abdomen with broad bands; sides of fifth segment without patches of white tomentum ; flagellum red beneath.
Xenoglossodes excurrens Ckll.

Sides of fifth abd. s. with patches of white tomentum ; flagellum all black.
Tetralonia lippiæ semilippiæ (Ckll.).

GROUP L.

Last two segments of abdomen with black or fuscous hair, except sometimes at extreme sides ; hair of thorax above with black (very little in *hewetti* and *dentiventris*).

Hair on inner side of basal joint of hind tarsi ferruginous ....1.

Hair on inner side of basal joint of hind tarsi black or fuscous.......GROUP M.

1. Hair of vertex without black ; larger species..............................2.

Hair of vertex with black, at least at sides ....4.

2. Hair of thorax in front pale yellowish cinereous; eyes green; abdominal bands narrow......................**Melissodes martini** Ckll.

Hair of thorax in front fulvous; eyes brown or greyish brown; abdominal bands broad; tegulæ rufous.....................................3.

3. Larger; legs red; a light band in scutello-mesothoracic suture; an oblique (pointed anteromesad) hair band at sides of second abd. s., the region below and mesad of the band hairless...........**M. texana** Cress.

Smaller; legs black or nearly; no light band in scutello-mesothoracic suture; second abdominal segment hairy right across, as in *M. suffusa*.
M. petulca Cress.

(*Texana* and *petulca* are very closely allied, but separable as indicated. *M. petulca*, however, is a variety of *suffusa*, separable by the hair of the last two abdominal segments being very dark chocolate; the abdomen perhaps averages narrower. *M. petulca* has priority of place over *suffusa*.)

The following two species will be looked for here:

Tetralonia fuscotincta (Ckll.), from Arizona; hair of vertex with no black; length about 11 mm., abdomen with three broad white bands; a white patch at each side of fifth segment.

Melissodes grandissima Ckll., from Texas; very large species; flagellum dark; hair on inner side of b. j. fuscous, with some ferruginous basally; legs black.

4. Hair of thorax above fulvous, with only a few black hairs; eyes light green; large species....................................**M. hewetti** Ckll.

Hair of thorax above with much black.......................................5.

5. Hair of thorax in front fulvous; species of West Indies, rather small, abdomen with two fulvous hair bands, and rudiments of a third. **M. trifasciata** Cress.

Hair of thorax in front not fulvous, but pale cinereous, at most with a slight yellowish tint..6.

6. Fifth abdominal segment with a patch of white tomentum on each side; light bands on abdominal segments 2 and 3 basal........................7.

Fifth abdominal segment without a patch of white tomentum on each side, though sometimes a tuft of light hairs...........................8.

7. Species of United States...............**Florilegus condigna** (Cress.).

Species of Cuba; much brown-black hair on hind margin of scutellum, but postscutellum with abundant, long, creamy-white hair; tegulæ redder than in *condigna*, and much reddish on abdomen. **Florilegus lanieri** (Guér.).

(Both *condigna* and *lanieri* have metallic tints on the abdomen in ♀, green and crimson. If both occurred in the United States, I should think *condigna* a variety or race of *lanieri*.)

8. Abdomen with only one hair band, this cream color, very well defined, on second segment (Arizona).......**Melissodes epicharina** Ckll.

Not so; more than one band..9.

9. Hair bands of abdomen pale fulvous; size medium.....**M. gilensis** Ckll.

Hair bands of abdomen white...10.

10. Larger (but not so large as *gilensis*); hair on outer side of hind tibiæ and tarsi yellowish; apical margins of second and third abd. segments bare; second segment with a median linear white band. **M. communis** Cress.

(*M. hortivagans* Ckll., var. *a*, from Kansas, runs to *communis*, but is more robust, with a much broader abdomen, and more space between the sides of black patch on mesothorax and tegulæ.)

Smaller; hair on outer side of hind tibiæ and tarsi white; quite small species..11.

11. Hind margins of second and third abd. s. covered with pubescence; scopa on hind legs comparatively short; abdomen between the bands very shining..**M. sphæralceæ** Ckll.

Hind margins of second and third abd. s. bare; scopa of hind legs very long. **M. humilior** Ckll.

(*M. pecosella* var. *verbesinarum* Ckll., with hair of b. j. within fuscous, may perhaps be looked for here, but it has the abdominal bands, etc., as in *M. pallidicincta*.)

NOTE —Somewhere here comes *M. fimbriata* Cress. from the description (I have seen only the male), though Cresson mentions no black hair on vertex. It has nervures black; legs with fulvous pubescence; length slightly over 11 mm. Cresson says allied to *rivalis*.

Group M.

Hair on inner side of basal joint of hind tarsi black or fuscous.

Hair of anterior part of thorax deep fulvous.................................1.

Hair of anterior part of thorax pallid, at most slightly yellowish or pale ochraceous (except sometimes quite fulvous in *M. grindeliæ*) ....2.

1. Largest, length of anterior wing 13 mm.; similar in appearance to *M. comanche*; species of Texas ....**Melissodes grandissima** Ckll.

Larger than *dentiventris*, length of anterior wing about 11 mm.; hair of disc of thorax black; abdomen with two pale fulvous hair bands.
M. coloradensis Cress.

Smaller, length of anterior wing a little over 8 mm.; hair of thorax above nearly all fulvous......................**M. dentiventris** Smith.

2. Head extremely broad; eyes pale bluish grey; tegulæ black; abdomen with three broad white hair bands ....**M. pallidicincta** Ckll.

Head ordinary...3.

3. No light hair at sides of fifth abdominal segment ....4.

Some light hair at extreme sides of fifth abdominal segment...............5.

4. Larger; tegulæ with a tuft of pale hair; eyes blue-grey..**M. mysops** Ckll.

Smaller; tegulæ with a tuft of black hair; eyes light green; hair of labrum black...................................**M. confusa** Cress.

5. Larger ....6.

Smaller; abdominal bands white or yellowish white (sometimes pale also in *grindeliæ*, but then size comparatively large ....7.

6. Abdominal bands fulvous; tegulæ with some black hair; hair of labrum light.
M. grindeliæ Ckll. = **montana** Cress.

(The ♀ *montana* is *grindeliæ*, but not the male.)

Abdominal bands creamy-white; tegulæ without black hair (Arizona).
M. nigrosignata Ckll.

(*M. nigrosignata* varies in color of hair of middle tarsi, which, though typically black, may be largely pale. A more extreme variety, from the same locality, has been named var. *pallidosignata* Ckll. This has segments 2-4 of abdomen practically covered with pale ochreous hair, and hair on outer side of middle tarsi all yellowish white. It is easily known from *grindeliæ* by having the hair on tegulæ all light.)

7. Tegulæ with some very short black hair; hair of middle tarsi black.
M. perplexa Cress.

Tegulæ without black hair..8.

8. Hair of middle tarsi white; scopa of hind legs very long.
M. intermediella Ckll.

Narrower than *intermediella*; abdominal banding like that of *M. pallidicincta*; distinguished from *sphæralceæ* by broader abdominal bands, and hind margin of first segment not hyaline, etc.; abdomen much narrower than in *Xenoglossodes excurrens*...............**M. pecosella** Ckll.

Rather more robust than *pecosella*; flagellum bright ferruginous beneath; occuring at lower altitudes than *pecosella*.
M. pecosella verbesinarum Ckll.

Narrow species, looking like *Tetralonia lippiæ*; abdominal bands white (almost bluish white), not creamy as in *pecosella*, etc.; tegulæ light fulvous (Arizona)..............................**M. duplocincta** Ckll.

NOTE.—Allied to *M. mysops* is *M. desponsiformis* Ckll., from Oregon. The following table separates this species from several of its allies.

Cheeks with black or sooty hair..1.

Cheeks with yellowish white or greyish white hair........................2.

1. Abdomen without hair bands; middle of mesothorax strongly and closely punctured..**cnici** Rob.

Abdomen with pale hair bands on segments 3 and 4, and a line on each side of 2; middle of mesothorax shining and rather sparsely punctured. **desponsiformis** Ckll.

2. Dorsum of thorax with a good deal of black hair; inner orbits parallel. **mysops** Ckll.

Dorsum of thorax without black hair; inner orbits diverging above. **glenwoodensis** Ckll.

GROUP N.

Last two segments of abdomen with the hair not, or not all (excluding extreme sides) black or fuscous.

Thorax above with some black hair ....1.

Thorax above without black hair....................................GROUP O.

1 Small species; abdomen beyond first segment covered with fulvous tomentum. **Melissodes pinguis** Cress.

Rather large; abdomen beyond middle of second segment covered with orange-fulvous hair.................**Xenoglossa exquisita** (Cress.).

Not like either of the above..2.

2. Fifth abdominal segment with black hair, the sides with patches of white tomentum ....**Florilegus condigna** (Cress.).

(Compare here also *Tetralonia donata* (Cress.), which has the fifth abdominal segment with black hair, but apical margin narrowly fuscous; a small species of Mexico, not quite 9 mm. long.)

Larger; fifth abdominal segment with brown or purplish brown hair, and no lateral patches of white tomentum ....3.

3. Mesothorax with hardly any black hair; tegulæ light apricot color; very large species; eyes light green; fourth abdominal segment without a diamond shaped (or any) nude area ....**M. helianthelli** Ckll.

Mesothorax with much black hair; tegulæ darker................. ....4.

4. Smaller; eyes strongly yellowish (or may be yellowish grey); flagellum darker; abdomen more pubescent, segments 2 and 3 with very broad, entire, ochreous hair bands, covering apical margins. **M. suffusa** Cress.

Larger; eyes plumbeous; flagellum clear red beneath, except the two basal joints; abdomen less pubescent, fourth segment with a diamond shaped nude area; segments 2 and 3 with oblique lateral stripes of hair, the apical margins bare................**M. comanche** Cress.

NOTE.—*M. suffusa* has a good deal of superficial resemblance to *Tetralonia frater aragalli*, but it is a true *Melissodes*, as shown by the maxillary palpi. Characteristic of *suffusa* is the white hair covering whole of face, contrasting with the fulvous of occiput and mesothorax. The tegulæ are a warm red.

By the description, *M. intermedia* Cress. comes in this group: Cresson says it may be the ♀ of *honesta.* I searched for the type in the collections at Washington and Philadelphia, but without success. It is a little over 11 mm. long, venter with brown pubescence, whitish at extreme sides; labrum covered with dense ochraceous hairs. It can be distinguished from *suffusa* thus:

Clypeus almost nude; abdominal segments 2 to 4 with narrow apical bands of white pubescence ....**intermedia** Cress

Clypeus covered with hair; larger (length about 13 mm.); abdominal segments 2 to 4 with extremely broad apical bands of ochreous pubescence. **suffusa** Cress.

GROUP O.

Thorax above without black hair; last two segments of abdomen with the hair not black.

Entirely dull red, legs brighter; about 14 mm. long; mandibles bidentate at tip (Utah).........................**Xenoglossa utahensis** Ckll.

Not so...1.

1. Large species...2.

Rather small species..3.

2. Abdomen with broad white bands on segments 3 and 4, that on 2 much reduced; scape and legs red. **Melissodes machærantheræ** Ckll.

Abdomen with three broad grey bands; maxillary palpi 6-jointed; hind spur of hind leg not hooked..........**Tetralonia speciosa** (Cress.).

Much like *speciosa*, but a little smaller, and hind spur hooked at end. **T. dilecta** (Cress.).

Much like *dilecta*, but hind spur not hooked, and hair at apex of abdomen differently colored ....**T. cordleyi** Viereck.

(Compare also *T. lata* (Prov.), which has bands on segments 3 and 4, but none on 2; segment 5 black, with a white patch on each side.)

3. Flagellum dark, with only the faintest brown tint; mesothorax dull and granular............................**Tetralonia actuosa** (Cress.).

(I examined the maxillary palpi of the type of *actuosa*, and found them 6-jointed. Compare here also *T. donata.*)

Flagellum ferruginous beneath.......................................4.

4. Larger; mesothorax densely pubescent; tegument of abdomen stained with red................................**Melissodes spissa** Cress.

Smaller; mesothorax bare, except in front, shining and punctured; third and fourth abdominal segments covered with whitish tomentum. **M. stearnsi** Ckll.

NOTES.

(1.) The type of *M. spissa* has the hair of thorax yellow-ochreous. A variety (Texas; Cresson collection) has this pubescence bright orange fulvous, and the abdominal hair bands fulvous. Characters of *spissa* are the closely punctured abdomen, facial quadrangle square, anterior edge of clypeus reddish, and tegulæ red.

(2.) *Melissodes herricki* Ckll. is to be compared with the larger species of this group. It is large, covered with fulvous tomentum (white on cheeks, pleura and venter). Superficially it looks just like *M. townsendi.*

(3.) *Tetralonia stretchii* (Cress.) is also to be compared with the larger species. The type shows the following characters: length about 13½ mm.; flagellum thick, black, with only a faint reddish tint at tip; abdomen with dense white tomentum at extreme bases of segments 3 and 4; hair at sides of apical plate bright shining orange fulvous; mesothorax dull, only faintly shining on middle of disc; hair of thorax above long and erect, greyish white; clypeus densely punctured all over, with no keel or median line; no dark hair on fifth abd. s.; scopa on outer side of hind legs white, with a faint creamy tint. I have not seen the palpi of this species, but I assume it to be a *Tetralonia* because of its manifest affinity with *T. idiotes* Ckll., which, however, is larger (about 15 mm. long), and has the fifth abd. segment covered with reddish hair, and having a suffused median dark brown band. I am disposed to believe that *idiotes* will prove to be only a race of *stretchii.*

(4.) *Tetralonia cressoniana* Ckll., from Texas, may be compared with the smaller species of this group. It has the mesothorax densely pubescent; abdomen with four white bands; apical hair of abdomen very dark chocolate, almost black, except at sides of segment 5, where it is white.

(5.) *Melissodes suavis* Cress., according to the description, falls in this group, among the smaller species. Cresson says that the abdomen appears white, with four narrow shining black bands, these bands being the apical margins of the segments. Apex with fulvous pubescence.

(6.) *M. pygmæa* Cress., by the description, falls in this group; it is a small species, about 7½ mm. long. Flagellum "brown-testaceous" beneath; abdomen with segments 1 and 2 smooth and polished, the rest at base with a very dense brown sericeous pubescence, and at apex with broad band of very short, dense, whitish pubescence.

MELISSODES Latr.*

The following are new records:

M. petulca Cress. Fedor, Texas, May 31st and June 17th (*Birkmann*).

M. petulca suffusa (Cress.). Fedor, Texas, May 12th (*Birkmann*); Flagstaff, Arizona, August, 1902 (*Snow*, 441).

M. grindeliæ Ckll. ♂. Oak Creek Canon, Arizona, 6000 feet; not quite typical, third submarginal cell narrower above, and more black hair on thorax than usual (*Snow*), also five females from same locality (*Snow*).

M. gilensis Ckll. ♂. Arizona (*Snow*); Colorado (Cresson collection); ♀, Magdalena Mountains, New Mexico (*Snow*, 1052).

M. tristis Ckll. ♂. Oak Creek Canon, Arizona (*Snow*); Magdalena Mountains, N. M. (*Snow*).

M. montana Cress. ♂. Oak Creek Canon, Arizona (*Snow*).

M. pallidicincta Ckll. ♀. Bill William's Fork, Arizona (*Snow*, 1005); Oak Creek Canon, Arizona, 6000 feet (*Snow*); Boulder, Colorado, ♀, at flowers of *Opuntia*, July 5th (W. P. Cockerell); Magdalena Mountains, New Mexico (*Snow*, 1190); Clark County, Kansas, 1962 feet (*Snow*, 1187).

M. intermediella Ckll. ♀, var. with broader bands, like the So. California form, Arizona (*Snow*).

M. aurigenia Cress. Oak Creek Canon, Arizona, both sexes (*Snow*); Sterling, Colorado (*S. A. Johnson*); Durango, Colorado (Gillette); Greeley, Colorado (*S. A. Johnson*); Fort Collins, Colorado (Colo. Agric. College).

M. menuacha Cress. Denver, Colorado (*S. A. Johnson*).

M. communis Cress. ♀. Tegulæ fulvous, and band on third abd. s. more or less divided into two, but real *communis*, nevertheless. Bill William's Fork, Arizona (*Snow*, 1004).

M. agilis subagilis Ckll. 7 males, Oak Creek Canon, Arizona (*Snow*).

M. confusa Cress. ♂. Colorado (*Snow*, 856).

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* It has been held that *Melissoda* Lepel., 1841, is a homonym of *Melissodes*. I cannot agree to this, and in my opinion Lepeletier's name should be restored, if the genus is considered distinct from *Acanthopus* Klug, and if it is certain that it has priority over *Ctenioschelus*, Romand, published in the same year. Smith, however, cites as a synonym *Ischnocera* Shuck, 1840 (not *Ischnocerus* Grav., 1829), but I suppose in error, as Dalla Torre gives no reference to it.

The occurrence of *M. suffusa,* and especially of *M. communis,* in Arizona was quite unexpected.

I omitted to state, in my original account of *Melissodes martini,* that it visits the flowers of *Petalostemon oligophyllus.*

TETRALONIA Spinola (*Synhalonia* Patton).

Tetralonia fedoris n. sp. (*rosæ* var. ?).—♂. Length 11 mm. or slightly more; antennæ about 10 mm.; black, the abundant pubescence of thorax light yellowish ochreous, without any black; hair of cheeks long and white; of legs dull white, most of that on outside of middle and hind tibiæ and hind tarsi with a strong sooty stain; hair on inner side of basal joint of hind tarsi reddish chocolate color; hind spurs normal; clypeus strongly punctured, entirely lemon-yellow; labrum yellowish white, with very pale reddish hair; mandibles with a small yellow spot; antennæ entirely black; mesothorax strongly punctured, the middle feebly shining; tegulæ testaceous; wings suffused with reddish; second submarginal cell broad, receiving the first recurrent nervure a little before the beginning of the last fourth; abdomen very shiny, punctured, the sides of segments 2 to 4 with short greyish white tomentum, the same forming a continuous band on the fifth segment; sixth with a heavy fringe of dark fuscous hair; sides of apex with a rudimentary tooth, short, low and broad.

Hab.—Fedor, Texas, May 5, 1901 (*Birkmann*). In Robertson's table this runs to *T. rosæ* Rob., of which it may be a variety or race; but I have never seen *T. rosæ,* and Robertson's account makes no reference to the more striking characters of the present insect. It is quite similar in general appearance to *T. frater* Cress., but is readily known from that by the shorter (about half as long) third antennal joint, yellower hair of thorax, spot on mandibles, broader apical plate of abdomen, dark hair of sixth abdominal segment and sooty hair on hind tibiæ, etc. From *T. truttæ* Ckll. it differs at once by the strongly punctured, rather shiny mesothorax.

Tetralonia birkmanniella n. sp.—♂. Length about 11 mm.; black, hair of thorax dull white, with an ochreous tinge above; clypeus pale lemon-yellow, the yellow rectangularly notched at the sides; labrum yellowish white, with white hair; mandibles with no yellow spot; antennæ entirely black, third joint conspicuously longer than broad; scape short and thick; mesothorax strongly punctured, the middle shining; tegulæ testaceous; abdomen with greyish white tomentum, forming distinct bands; fringe of sixth segment white; hair of legs white, that on inner slde of basal joint of middle and hind tarsi orange-ferruginous; middle and hind tarsi slender and rather long; hind spurs normal.

Hab.—Fedor, Texas, April 1, 1898 (*Birkmann*).

Another hymenopterist had labelled this *T. lepida* Cress., but it differs conspicuously from one of Cresson's cotypes of *lepida,* though of the same general aspect. It differs from *lepida* by the much broader face and smaller and less prominent eyes, and in the broader, truncate apical plate of the abdomen, which is conspicuously notched on each side subapically. In *lepida* the apical part (nearly half) of the basal joint of middle tarsus is ferruginous and somewhat constricted, but in *birkmanniella* the whole joint is black and normal though slender.

The following table will facilitate the separation of the above two species from their allies:

Third antennal joint very short, broader than long seen from in front; clypeus entirely yellow; mandibles with a small yellow spot; abdomen very shiny.................................**fedoris** Ckll.
Third antennal joint longer than broad, seen from in front; abdomen less shiny.................................1.
1. Abdomen very distinctly banded.................................2.
Abdomen not very distinctly banded, or not banded.................................3.
2. Face very narrow, conspicuously narrower than the combined width of the eyes, as seen from in front.................................**lepida** (Cress.).
Face broader than combined width of eyes........**birkmanniella** Ckll.
3. Mesothorax shiny and conspicuously punctured; mandibles with a minute yellow spot.........................**gillettei snoviana** Ckll.
Mesothorax dull; mandibles with no yellow spot.................................4.
4. Last ventral segment with two conspicuous longitudinal keels; size smaller. **territella** Ckll.
Last ventral segment without such keels; size larger; narrow upper edge of clypeus black.................................5.
5. Abdominal segments 4-6 with much light hair; third antennal joint short. **frater** (Cress.).
Abdominal segments 4-6 with black hair; third antennal joint longer. **truttæ** Ckll.

Tetralonia dilecta (Cresson).

Barela Mesa, New Mexico (*Anna Gohrmann*); Baldwin, Kansas (*Bridwell*); Illinois (*Robertson*); Fort Collins, Colorado (*Colorado Agr. College*); Boulder, Colorado, at flowers of *Aragallus*, June 10, 1905, ♀ (*W. P. Cockerell*). This unfortunate species has been repeatedly confused with *T. frater* and *T. speciosa*, but it is easily known by the hooked spurs. It is the *T. speciosa* of Robertson's table in Trans. Am. Ent. Soc., xxxi, 366–367, and of my description in Entomologist, June, 1905, p. 148. *T. frater aragalli* Ckll., which is very similar in appearance, has the spurs of hind leg quite simple. The following table will be useful for the separation of several females having the general appearance of *dilecta:*

Fourth abdominal segment covered with black tomentum .... **lycii** Ckll.

Fourth abdominal segment with a very broad light band, the black confined to the base .... 1.

1. Apical fringe of fifth abd. s. black, except at extreme sides. **cordleyi** Viereck.

(*Cordleyi* goes south to California, as shown by a specimen in the Cresson collection.)

Apical fringe of fifth abd. s. pale or ferruginous .... 2.

2. Hind spur of hind tibia hooked at end .... **dilecta** (Cress.).

Hind spur of hind tibia not hooked .... 3.

3. Larger, length of anterior wing 12 mm.; bands of abdominal segments 2 to 4 greyish white .... **speciosa** (Cress.).

Smaller, length of anterior wing 9 mm.; bands of abdominal segments 2 to 4 pale ochreous .... **frater aragalli** Ckll.

Tetralonia edwardsii vagabunda n. subsp. ♂.

Hab.—Boulder, Colorado, June 4, 1905, at flowers of *Onosmodium*, 5 ♂ (*W. P. Cockerell*). Hair of thorax above whitish; basal half of second abdominal segment with light hair; fifth segment with a light band. Superficially much like *T. fedoris*, but easily distinguished by the entirely different sculpture of mesothorax. The characters of this form are best set forth by means of a table of forms with a dull mesothorax:

Smaller; venter with a pair of conspicuous subapical keel-like teeth. **territella** Ckll.

Larger; venter without such teeth .... 1.

1. Apical segments of abdomen with much pale hair, sixth with a heavy dull white fringe; yellow of clypeus notched at sides; last ventral segment with a large round basal pit at each extreme side, and a curved line or groove along lateral margins .... **frater** (Cress.).

Apical segments of abdomen with much black hair, the pale hair when present reduced to narrow bands .... 2.

2. Face broader, yellow of clypeus not approaching orbital margin (style of *T. atriventris*); second s. m. larger, receiving first r. n. some distance from end; apical segments of abdomen without noticeable light bands; yellow of clypeus concave at sides, but not abruptly notched; last ventral segment rough basally, with short black bristles; laterally (but not basally) the segment has a pit or depression, the inner edge of which is somewhat raised, representing apparently a rudiment of such a tooth as is found in *territella;* submarginal area caudo-mesad of the pit (nearly at right angles with it) broad and punctured, its end ill defined .... **truttæ** Ckll.

Face narrower, yellow of clypeus closely approaching orbital margin (style of *acerba* and *edwardsii*); second s. m. smaller, receiving the first r. n. almost at its end; yellow of clypeus abruptly (rectangularly) notched at sides; last ventral segment similar to that of *truttæ* in most respects,

but the roughened base is reduced and the pit and marginal area run somewhat together, the end of the latter (mesad) being well defined, and pointed. Fifth abdominal segment with an entire narrow light hair band, sixth with a heavy dark chocolate colored fringe.
edwardsii vagabunda Ckll.

In Bull. So. Cal. Acad. Sci., February, 1905, p. 31, I describe a variety of *T. angustior* (Ckll.), having pale hair bands on segments 4 and 5 of abdomen. This insect, from Los Angeles, California, is exactly *vagabunda*, except that it has the fulvous thoracic pubescence of true *edwardsii.*

I have before me a male labelled *edwardsii* type, one of Cresson's original specimens. It has the hair of thorax above light fulvous; last ventral segment much as in *vagabunda*, the marginal area united with the pit, and sharply pointed and well defined mesad; second submarginal cell conspicuously broader than high, which is not the case in *vagabunda.* This male, however, has the hair of the apical segments of the abdomen all black, and *only black hair on the second segment.* It is, in fact, the insect which passes as male *T. acerba.*

The description of *T. edwardsii* refers to pale hair on the second segment, and so it is evident that the original series (of six) contained two species, and there is no occasion to unite *edwardsii* with *acerba.* The true *edwardsii* must be identified with the form which I named *angustior*, though the description indicates that the series may also have included *vagabunda.* ("Sometimes the fourth and fifth segments have each a narrow, indistinct, subapical fascia of white pubescence.")

In Proc. Acad. Nat. Sci. Phila., 1897, I recognized two races of *T. edwardsii*, which I named *latior* and *angustior.* Prof. Kincaid collected them in large series in Washington State, and found only *latior* at Olympia and Seattle, near the coast, and only *angustior* at Pasco, inland. Mr. Viereck's account of the distribution in Canad. Ent., 1905, p. 315, is misleading, but he has ascertained that both forms occur at Corvallis, Oregon. Some time ago I became convinced that these two supposed races were quite distinct species, and thinking that *latior* was the real *edwardsii*, proposed *angustior* as a valid species. Since it appears that *angustior* is *edwardsii*, it is *latior* that must be raised to specific rank; but it has an earlier name given by Provancher (as *Melissodes*), and will stand as *Tetralonia lata* (Prov.).

Tetralonia crenulaticornis (Ckll.).

Manitou Park, Colorado (*Snow*, 858). New to Colorado.

Tetralonia lippiæ (Ckll.).

Arizona (*Snow*, 466).

Tetralonia fulvitarsis (Cress.).

Fort Collins, Colo., May 12, 1901 (*Col. Agr. College*).

CHECK-LIST OF NORTH AMERICAN ANTHOPHORIDÆ.

(V. C. = State of Vera Cruz, Mexico; Chih. = State of Chihuahua, Mexico; L. Cal. = Lower California, Mexico.)

Subf. CENTRINÆ.

Centris Fabr.

Subg. PTILOTOPUS Klug.

1. **æthiops** Cress., Cuba.
2. **armillata** Cress., Cuba.
    (? ♂ of *æthiops.*)
3. **aterrima** Smith, Mexico.
4. **atripes** Mocs., Mexico, Texas.
5. **atriventris rubripes** Friese, Panama.
6. **birkmanni** Friese, Lee Co., Tex.
7. **cæsalpiniæ** Ckll., New Mexico (fls. *Hoffmanseggia*).
8. **clypeata** Friese, Mexico, Guatemala.
9. **cockerelli** Fox, New Mexico, California (fls. *Hoffmanseggia*).
10. **domingensis** D. T., S. Domingo.
    thoracica *Smith.*
11. **foxi** Friese, Texas.
    atriventris *Fox.*
12. **hoffmanseggia** Ckll., New Mex- (fls. *Hoffmanseggia*).

12*a* **davidsoni** Ckll., So. Calif.

13. **lanosa** Cress., Texas, L. Cal., Sonora.
14. **limbata** Friese, Fedor, Tex.
15. **lutea** Friese, Mexico.
16. **marginata** Fox, New Mex. (fls. *Cevallia*).
17. **melanochlæna** Smith, Mexico.
    nobilis *Friese.*
18. **mexicana** Smith, Mexico.

18*a* **albiceps** Friese, Mexico.

19. **mocsaryi** Friese, Mexico.
20. **morsei** Ckll., New Mex., Texas.
21. **nitida** Smith, Honduras.
22. **otomita** Cress., Mexico.
23. **pallida** Fox, Phoenix, Ariz. (fls. *Parkinsonia*).
24. **rhodopus** Ckll., New Mex. (fls. *Hoffmanseggia* and *Prosopis*).

24*a* **pulchrior** Ckll., New Mexico.

25. **sericea** Friese, Mexico.
26. **subhyalina** Fox, Texas.
    (? ♀ of *lanosa.*)
27. **xylocopoides** Fox, Trinidad, Grenada.
28. **zonata** Mocs., Panama.
    pandora *Friese.*

Subg. HETEROCENTRIS Ckll.

29. **difformis** Smith, Mexico.
    cornuta *Cress.*, Cuba.
30. **labrosa** Friese, Honduras, Guatamala.

Subg. TRACHINA Klug.

31. **agilis** Smith, Mexico.

31*a* **abdominalis** Friese, V. C.

32. **ignita** Smith, Orizaba, Mex.
33. **inermis** Frieze, Orizaba, Mexico.
34. **lanipes** Fabr. (fls. *Stachytarpha*).
    dentipes *Smith*, Mex., W. Indies.
    fulviventris Cress., Mex., Cuba.
35. **montezuma** Cress., Mexico.

36. **proxima** Friese, Costa Rica (Crawford, litt.).
37. **simillima** Smith, S. Domingo.
38. **testacea** Lep., S. Domingo.
39. **totonaca** Cress., Mexico.

Subg. HEMISIA Klug.

40. **citrotæniata** Griboda, Panama.
41. **crassipes** Smith, Jamaica.
42. **decolorata** Lep., Mexico, S. Domingo.
    obscuriventris *Friese.*
43. **elegans** Smith, St. Vincent.
    gracilis *Friese.*
44. **flavifrons** Fabr., Mexico.

44*a* **rufescens** Friese, Panama.

44*b* **flavofasciata** Friese, Mexico.

45. **hæmorrhoidalis** Fabr., San Domingo, Jamaica.
46. **insularis** Smith, S. Domingo.
47. **maculifrons** Smith, Mexico.
48. **nigrocærulea** Smith, Mexico.
49. **pœcila** Lep., Cuba, Mex., Panama.
50. **smithii** Cress., S. Bartholemew.
    apicalis *Smith.*
51. **versicolor** Fabr., Mex., Jamaica (fls. *Crotalaria*).
    errans *Fox*, Florida.

51*a* **apicalis** Guér., Cuba.

Subg. PŒCILOCENTRIS Friese.

52. **fasciata** Smith, Jamaica.
    fasciatella *Friese.*
53. **eisenii** Fox, Guaymas, Mex.

Epicharis Klug.

54. **bicolor** Smith, Mexico.
    flaviventris *Friese.*
55. **elegans** Smith, Mexico.
56. **lateralis** Smith, Trinidad.
57. **lunulata** Mocs., Mexico.
58. **monozona** Mocs., Mexico.

Subg. EPICHAROIDES Rads.

59. **maculata** Smith, Mexico.
    variabilis *Friese.*
    albofasciata *Smith.*
    bipunctata *Rads.*

Tetrapedia Klug.

60. **abdominalis** Cress., Mexico.
61. **antennata** Friese, Mexico.
62. **apicalis** Cress., Orizaba, Mex.
63. **atripes** Smith, Mexico.
64. **calcarata** Cress., Mex.
65. **fratera** Cress., Mex.
66. **lugubris** Cress., Mex.
67. **maura** Cress., Mex., Guatemala.
68. **mexicana** (Rads.).
    saussurei *Friese*, Orizaba, Mex.

68*a* **grisescens** Friese, Mexico.

68*b* **fusciventris** Friese, Mex.

69. **mœsta** Cress., Mex., Guatemala.
    (? ♂ of *atripes.*)
70. **terminalis** Cress., Mex.

Exomalopsis Spinola.

71. **fulvescens** Smith, Oaxaca and Orizaba, Mex.
72. **globosa** (Fabr.), Porto Rico, S. Thomas.
    obliqua *Friese.*
73. **limata** Cress., Orizaba, Mex.
74. **mellipes** Cress., Mex. (fls. *Cordia*).
75. **mexicana** Cress., Mex.
76. **otomita** Cress., Orizaba and Cordova, Mex.
77. **penelope** Ckll., V. C. (fls. *Cordia*).
78. **pubescens** Cress., Cuba; var. in Jamaica.
79. **pulchella** Cress., Cuba, Hayti, Porto Rico, Jamaica, L. Cal.
80. **rufitarsis** Smith, Jamaica.
81. **similis** Cress., Cuba, Costa Rico (Crawford litt.).
82. **solani** Ckll., New Mex. (fls. *Solanum*, *Flaveria*, etc.).
83. **solidaginis** Ckll., New Mex. (fls. *Solidago* and *Lippia*).
84. **tepaneca** Cress., Mexico.
85. **verbesinæ** Ckll., New Mex. (fls. *Verbesina*).

Anthophorula Ckll.

86. **bruneri** (Crawf.), Nebraska (fls. *Helianthus*).
87. **compactula** Ckll., New Mexico (fls. *Dithyræa* and *Phacelia*).

88. **coquilletti** (Ashm.), Calif.
89. **serrata** (Friese), Orizaba, Mex.
90. **sidæ** (Ckll.), New Mex. (fls. *Sida*).
91. **texana** (Friese), Fedor, Texas.

Subf. ANTHOPHORINÆ.

Tribe ENTECHNIINI.

Entechnia Patton.

92. **fulvifrons** (Smith), Texas, Mex.
marginella *Cress.*
ipomœæ *Schrottky* (fls. *Ipomœa*).
93. **grisella** Ckll. and Porter, New Mex., Colo., Dakota, Neb. (fls. *Ipomœa leptophylla*, fide Crawford, litt.).
dakotensis *Ckll. and Porter.*
94. **taurea** (Say), Ills., Ga., etc. (fls. *Convolvulus*).
95. **toluca** (Cress.), Mex., L. Cal.

Tribe ANTHOPHORINI.

Anthophora Latr.

96. **abrupta** Say, E. States.
sponsa *Smith.*
97. **abruptella** Ckll., So. Calif.
98. **affibilis** Cress, Texas, New Mex. (fls. *Astragalus*, *Lycium*).
99. **atrata** Cress., Cuba.
100. **badia** Dours, Mexico.
101. **bidentata** (Prov.), Canada.
nudata *Prov.*
102. **bomboides** Kirby, Canada, N. States.
102*a* **canadensis** Cress., Ontario.
102*b* **neomexicana** Ckll., N. Mex., Colo. (fls. *Lycium*, etc.).
103. **californica** Cress., Calif.
104. **capistrata** Cress., Texas, L. Cal.
105. **catalinæ** Ckll., Catalina I.
106. **centriformis** Cress., Nevada.
106*a* **vierecki** Ckll., New Mex.
107. **citreostrigata** Dours, "N. Am."
108. **crotchii** Cress., Calif.. Wash.
109. **edwardsii** Cress., Calif., Nevada.
110. **fedorica** Ckll., Texas.
111. **frontata** Say, Louisiana.
112. **fuscipennis** Smith.
113. **godofredi** Sichel MS. Dours, St. Vincent.
114. **gohrmannæ** Ckll., New Mex., Colo., So. Cal. (fls. *Ribes*).
115. **hilaris** Smith, S. Domingo.
116. **histrio** Dours, Mexico.
117. **ignava** Cress., Calif., Ore., Nev. (? ♀ of *pacifica.*)
118. **infernalis** D. T., Nev.
carbonaria *Cress.*
corvicolor Ckll., So. Calif.
119. **krugii** Cress., Porto Rico.
120. **lesquerellæ** Ckll., New Mexico (fls. *Lycium*, etc.).
121. **luteodimidiata** Dours, Mex.
122. **marginata** Smith, Orizaba, Mex.
cleomis *Ckll.*, New Mexico (fls. *Peritoma*).
123. **mexicana** Dours, Mex.
124. **montana** Cress., New Mex., Colo. (fls. *Salvia*, etc.).
125. **occidentalis** Cress., New Mex., Colo., Tex. (fls. *Carduus*, *Peritoma*, *Convolvulus*, etc.).
126. **pacifica** Cress., Nevada, Calif.
127. **pernigra** Cress., Nevada.
128. **pluto** Dours, Mex.
129. **porteræ** Ckll., New Mex., Colo., Calif. (fls. *Ribes*).
129*a* **semiflava** Ckll., Colo.
130. **pulsella** Dours, Mex.
131. **pygmæa** Dours, Mex.
132. **pyralitarsis** Dours, New York.
133. **quinquefasciata** Prov., S. Calif.
134. **rufozonata** Dours, Mex.
135. **simillima** Cress., Col., Nev., New Mex. (fls. *Ribes*).
enops *Ckll.*
136. **smithii** Cress., New Mex., Colo., Tex., Dak.
136*a* **cardui** Ckll., New Mex., Colo. (fls. *Carduus*).
137. **sodalis** Cress., Nevada.
138. **solitaria** Ritsema, Vancouver I.
insularis *Smith.*
139. **squammulosa** Sichel MS. Dours. Mex.
140. **stanfordiana** Ckll., Calif.
141. **subglobulosa** Prov., Canada.

142. **tarsata** Sichel MS. Dours, Mex.
doursii *D. T.*
142*a* **subtarsata** Ckll., So. Cal.
143. **texana** Cress., Texas, New Mex., Ariz. (fls. *Hoffmannseggia*).
144. **tricolor** Lep., Hayti, Guadaloupe.
145. **unistrigata** Dours, Mex.
146. **urbana** Cress., Colo., Utah, Nev., Calif.
146*a* **alamosana** Ckll. New Mexico (fls. *Lycium*, etc.).
147. **ursina** Cress., E. States.
148. **volucellæformis** Dours, Mex.
149. **walshii** Cress., Illinois, Tex. (fls. *Cassia*).
150. **washingtoni** Ckll., Pasco, Wash.

Subg. MICRANTHOPHORA Ckll.

151. **albata** Cress., Colo.
152. **anstrutheri** Ckll., So. Cal.
153. **arthuri** Ckll., Colo.
154. **curta** Prov., Calif., New Mex., Colo.
154*a* **peritomæ** Ckll., Colo., N. Mex. (fls. *Peritoma*, *Isocoma*, *Solidago*).
155. **exigua** Cress., Nevada.
156. **flavocincta** Huard, So. Cal.
nigrocincta *Prov.*
157. **flexipes** Cress., Nev. So. Calif.
158. **maculifrons** Cress., Nevada.
159. **phenax** Ckll., New Mex.
160. **petrophila** Ckll., So. Calif.

Anthophoroides T. & W. Ckll.

161. **vallorum** (Ckll.), New Mexico. Chih. (fls. *Solanum*, *Ipomœa*, etc.).

Clisodon Patton.

162. **syringæ** (Ckll.), Wash. (fls. *Syringa*).
163. **terminalis** (Cress.), New Mex. to Maine (fls. *Polemonium*).
nubiterræ *Vier.*

Emphoropsis Ashmead.

164. **agilis** (Smith), Oaxaca, Mex.
165. **aurulentocaudata** (Dours), Mex.
166. **birkmanni** Ckll., Fedor, Tex.
167. **bombyformis** (Smith), Oaxaca, Mex.
bremiformis *D. T.*
168. **cineraria** (Smith), Vancouver I.
169. **depressa** (Fowler), Calif. (fls. *Quercus*, *Cytisus*).
170. **floridana** (Smith), E. States.
170*a* **fedorensis** Ckll., Fedor, Tex.
171. **fulva** (Smith), Guatemala.
172. **interspersa** Ckll., Calif.
173. **johnsoni** (Ckll.), Colo. (fls. *Delphinium*).
174. **melanopyrrha** (Dours), Mex.
175. **miserabilis** (Cress.), Nev., Calif. (fls. *Phacelia*).
176. **montezumia** (Smith), Oaxaca, Mex.
177. **morrisoni** (Cress.), Colo.
178. **mucida** (Cress.), Colo.
(? ♀ of *morrisoni.*)
cressonii *D. T.*
179. **murihirta** Ckll., So. Calif.
180. **pascoensis** (Ckll.), Pasco, Wash.
181. **rugosissima** Ckll., Nevada.
182. **salviarum** (Ckll.), New Mexico, Ariz. (fls. *Salvia*).
183. **semifulva** Ckll., Calif.
184. **terminata** (Smith), Oaxaca, Mex.
habropodoides *D. T.*
185. **tristissima** (Ckll.), So. Calif.

Emphor Patton.

186. **bombiformis** (Cress.), E. States (fls. *Hibiscus*, *Ipomœa*).

Dasiapis Ckll.

187. **ochracea** Ckll., New Mex., Ariz. (fls. *Sphæralcea*).
188. **olivacea** (Cress.), Mex., Calif.

Diadasia Patton.

189. **afflicta** (Cress.), Texas.
tricincta *Prov.*, Calif.
189*a* **perafflicta** Ckll., Kansas.
190. **albovestita** Prov., Calif.
191. **australis** (Cress.), Colorado, New Mexico (fls. *Opuntia*).

191*a* **opuntiæ** (Ckll.), So. Calif. (fls. *Opuntia*).
191*b* **rinconis** (Ckll.), N. Mex., Tex., California (fls. *Chilopsis*, *Opuntia*, etc.).
192. **bituberculata** (Cress.), Calif.
cinerea *Fowler*.
193. **diminuta** (Cress.), Calif., Ariz., N. Mex., etc. (fls. *Sphæralcea*).
apacha *Cress.*
194. **enavata** (Cress.), W. States (fls. *Helianthus*).
ursina *Cress.*
arctos *D. T.*
194*a* **densa** Cress., Tex., Colo.
195. **friesei** Ckll., So. Calif.
196. **laticauda** Ckll., Calif.
197. **megamorpha** Ckll., N. Mexico, (fls. *Sphœralcea.*)
198. **nigrifrons** (Cress.), Calif.
nerea *Fowler*.
199. **nitidifrons** Ckll., Calif.
200. **sphæralcearum** Ckll., N. Mex. (fls. *Sphæralcea*).
201. **sumichrasti** (Cress.), Mexico.

Subf. EUCERINÆ.

Tetralonia Spinola.

202. **acerba** (Cress.), Nevada, Calif. (fls. *Ranunculus*, *Brassica*).
203. **actuosa** (Cress.), Calif., Oregon.
204. **albicans** (Prov.), Calif.
205. **albopilosa** (Fowler), Calif. (fls. *Ranunculus*).
206. **astragalina** (Ckll.), Colo. (fls. *Astragalus*).
207. **atriventris** (Smith), E. States.
dubitata *Cress.* ♀ (not ♂).
208. **belfragei** (Cress.), Tex., Ills. (fls. *Polemonium*).
honesta *Cress.* (fide Rob.).
209. **birkmanniella** Ckll., Texas.
210. **californica** (Cress.), Calif.
211. **cordleyi** (Viereck), Oregon.
212. **crenulaticornis** (Ckll.), N. Mex., Colo. (fls. *Geranium*).
212*a* **maculata** (Ckll.), New Mexico (fls. *Vicia*).
213. **cressoniana** (Ckll.), Texas.
214. **dilecta** (Cress.) Ills to New Mex. (fls. *Phlox*, *Aragallus*, etc.).
215. **donata** (Cress.), Mexico.
216. **edwardsii** (Cress.), Nev., Calif., Wash., Oregon (fls. *Ranunculus*, etc.).
angustior *Ckll.*
216*a* **vagabunda** Ckll., Colo. (fls. (*Onosmodium*).
217. **fedoris** Ckll., Texas.
218. **flagellicornis** Smith, Oaxaca, Mex.
219. **fowleri** (Ckll.), Calif., Oreg.
californica *Fowler*.
220. **frater** (Cress.), Colo.
220*a* **aragalli** (Ckll.), Colo. (fls. *Aragallus*).
221. **fulvitarsis** (Cress.), Colo., Wyo.
222. **fulvohirta** (Cress.), Georgia.
223. **fuscotincta** (Ckll.), Arizona.
224. **gillettei** (Ckll.), Colo.
224*a* **snoviana** (Ckll.), Kansas.
225. **hirsutior** (Ckll.), So. Calif.
226. **idiotes** (Ckll.), So. Calif.
227. **illinoensis** (Rob.), Ills.
? fuscipes *Rob.*
228. **intrudens** (Cress.), Nevada, Calif. (fls. *Brassica*).
nevadensis *Cress.*
229. **lata** (Prov.), Vancouver I., Oreg., Wash. (fls. *Lupinus*).
latior *Ckll.*
230. **lepida** (Cress.), Tex., Col.
231. **lippiæ** (Ckll.), N. Mexico, Ariz. (fls. *Lippia*).
231*a* **semilippiæ** (Ckll.), Arizona.
232. **lycii** (Ckll.), New Mexico (fls. *Lycium*, *Astragalus*).
233. **nigricornis** (Prov.), Vancouver I.
234. **rosæ** (Rob.), Ills.
235. **speciosa** (Cress.), Colo.
236. **stretchii** (Cress.). Calif.
237. **territella** (Ckll.), Colorado (fls. *Prunus*).
238. **truttæ** (Ckll.), N. Mex (fls. *Iris*).
239. **virgata** (Ckll.), Calif.

Cemolobus Robertson.

240. **ipomœæ** (Rob.), Ills., Penna. (fls. *Ipomœa*).

Xenoglossa Smith.

241. **angelica** Ckll., So. Calif. (fls. *Cucurbita*).
242. **apiculata** (Cress)., Costa Rica.
243. **brevicornis** (Cress.), Tex., Nebr. (fls. *Teucrium*).
cressonii *D. T.*
244. **davidsoni** Ckll., So. Calif.
245. **exquisita** (Cress.), Mex.
246. **fulva** Smith, Mexico.
holopyrrha *Dours.*
247. **fulviventris** (Smith), Mexico ?
248. **gabbii** (Cress.), Costa Rica.
249. **mustelina** (Fox), L. Cal.
250. **patricia** Ckll., N. Mexico, Ariz. (fls. *Cucurbita*).
250*a* **angustior** Ckll., Ariz.. Calif. (fls. *Cucurbila*).
251. **pruinosa** (Say), E. States to Ariz. (fls. *Cucurbita*).
252. **strenua** (Cress.), N. Mex., Tex., Iowa, Ills., Ga. (fls. *Cucurbita*).
cucurbitarum *Ckll.*
252*a* **kansensis** Ckll., Kansas.
253. **utahensis** Ckll., Utah.

Xenoglossodes Ashmead.

254. **albata** (Cress.), Texas.
255. **eriocarpi** (Ckll.), New Mexico, Tex. (fls. *Eriocarpum*).
256. **excurrens** Ckll., Roswell, New Mexico.
257. **gutierreziæ** Ckll., New Mexico (fls. *Gutierrezia*).
258. **imitatrix** Ckll. and Porter, New Mexico (fls. *Sphæralcea*).

Florilegus Robertson.

259. **condigna** (Cress.), Ills., Kans.
palustris *Rob.*
260. **lanierii** (Guér.), Cuba.

Anthedon Robertson.

261. **compta** (Cress.), Ga. to Colo.

Martinella Ckll.

262. **luteicornis** (Ckll.), New Mexico (fls. *Prosopis*).

Melissodes Latr.

263. **agilis** Cress., Tex., Colo., N. Mex., etc. (fls. *Helianthus*, etc.)
263*a* **subagilis** Ckll.. Colo., Arizona (fls. *Grindelia*).
263*b* **aurigenia** (Cress.), Maine to Nev. (fls. *Helianthus*, etc.).
? pennsylvanica *Lep.*
264. **ambigua** Smith, Mexico.
265. **assimilis** Smith, Oaxaca, Mex.
266. **atrata** Smith, Oaxaca, Mex.
atratula *D. T.*
267. **atripes** Cress., Tex., Ills.
268. **autumnalis** Rob., Ills.
269. **bimaculata** Lep., E. States (fls. *Ipomœa*).
binotata *Say.*
nigra *Lep.*
270. **blakei** Ckll., Beulah, New Mex.
271. **boltoniæ** Rob., Ills.
272. **cajennensis** (Lep.), W. Indies.
273. **caliginosa** Cress., Md., Ga.
274. **carolinensis** D. T., N. C., Ga.
atrifrons *Smith.*
275. **chrysothamni** Ckll., Embuda, N. Mex. (fls. *Chrysothamnus*).
276. **cnici** Rob., E. States (fls. *Carduus*).
nigripes *Smith*, ♂ (not ♀).
? desponsa *Smith.*
277. **coloradensis** Cress., Colo., Ills. (fls. *Compositæ*).
278. **comanche** Cress., Texas.
279. **communis** Cress., Ga., Ills.
280. **comptoides** Rob., Ills.
281. **confusa** Cress., Colo., etc.
ruidosensis *Ckll.*, N. Mexico. (fls. *Pentstemon*, etc.).
282. **coreopsis** Rob., Ills.
283. **denticulata** Smith, E. States.
senilis *Smith.*
? rustica *Say.*
284. **dentiventris** Smith, E. States (fls. *Compositæ*).
? americana *Lep.*
? desponsa *Smith.*
285. **desponsiformis** Ckll., Oregon.
286. **duplocincta** Ckll., Arizona.
287. **epicharina** Ckll., Arizona.
288. **festonata** Prov., Canada.

289. **fimbriata** Cress., Texas.
290. **floris** Ckll., V. C. (fls. *Bidens*).
291. **galvestonensis** Ckll., Texas.
292. **georgica** Cress., Ga.
293. **gilensis** Ckll., New Mex., Ariz., Colo. (fls. *Sidalcea*, etc.).
294. **glenwoodensis** Ckll., Colo.
295. **grandissima** Ckll., Fedor, Tex.
296. **grindeliæ** Ckll., N. Mex., Ariz., (fls. *Grindelia, Senecio*, etc.).
297. **helianthelli** Ckll., Mesilla Valley, New Mexico (fls. *Helianthus*).
298. **herricki** Ckll., New Mexico.
299. **hewetti** Ckll., Santa Fé, N. Mex. (fls. *Peritoma*).
300. **hexacantha** Ckll., Arizona.
301. **hirsuta** Smith, Oaxaca, Mexico.
   oajacena *D. T.*
302. **hortivagans** Ckll., Kansas.
303. **humilior** Ckll., New Mexico.
304. **illinoensis** Rob., Ills. (fls. *Ratibida*).
305. **intermedia** Cress., Texas.
306. **intermediella** Ckll., New Mex., Ariz , Calif.
306*a* **catalinensis** Ckll., Catalina I.
307. **interta** Cress., Texas.
308. **kallstrœmiæ** Ckll., New Mexico (fls. *Kallstrœmia*).
308*a* **phenacoides** Ckll., New Mex.
309. **labiatarum** Ckll., V. C. (fls. *Labiatæ*).
310. **lupina** Cress., Calif.
311. **machæranthetæ** Ckll., N. Mex., Ariz. (fls. *Machæranthera*, etc.).
312. **manipularis** Smith, Ga.
313. **martini** Ckll., New Mexico (fls. *Petalostemon*).
314. **maura** Cress., Cuba.
315. **melanosoma** Ckll., Fedor, Tex.
316. **menuacha** Cress., W. States.
316*a* **submenuacha** Ckll., N. Mex.
316*b* **semilupina** Ckll., So. Calif.
317. **microsticta** Ckll., Vancouver I.
318. **mimica** Cress., Cuba, Jamaica.
319. **mizeæ** Ckll., Las Vegas., N. Mex. (fls. *Grindelia*).
320. **montana** Cress., New Mexico, Colo., Ariz.
321. **morosa** Cress., Mexico.
322. **mysops** Ckll., Colo. (fls. *Carduus*).
323. **nevadensis** Cress., Nevada.
324. **nigrosignata** Ckll., Arizona.
324*a* **pallidisignata** Ckll., Arizona.
325. **nivea** Rob., Ills.
326. **obliqua** Say, U. S. (fls. *Grindelia, Helianthus*, etc.).
327. **otomita** Cress., Mexico.
328. **pallida** Rob., Ills.
329. **pallidicincta** Ckll., New Mexico, Ariz., Kans. (fls. *Malvastrum, Sidalcea*, etc.).
   (? ♀ of *tristis*.)
330. **parosetæ** Ckll., Mesilla Valley, New Mex. (fls. *Parosela*).
331. **pecosella** Ckll., Pecos, N. Mex.
331*a* **verbesinarum** Ckll., Las Cruces, New Mex.
332. **pernigra** Ckll., V. C. (fls. *Ipomœa*).
333. **perplexa** Cress., Tex. to Maine.
334. **personatella** Ckll., La Jolla, Cal.
335. **petalostemonis** Rob., Ills.
336. **petulca** Cress., Ga., Tex.
336*a* **suffusa** Cress., Texas, L. Cal., Ariz.
337. **pinguis** Cress., Mexico.
337*a* **velutinellus** Ckll., V. C.
338. **prælauta** Ckll., Ariz.
339. **pullata** Cress., Cuba.
340. **pygmæa** Cress., Texas.
341. **raphælis** Ckll., V. C. (fls. *Ipomœa*).
342. **rivalis** Cress., Texas.
343. **rufodentata** Smith, St. Vincent.
344. **semitristis** Ckll., Arizona.
345. **simillima** Rob., Ills. (fls. *Compositæ*).
346. **smithii** D. T., Calif.
   californica *Smith.*
347. **snowi** Cress., Colorado.
348. **sphæralceæ** Ckll.. New Mexico (fls. *Sphæralcea*).
349. **spissa** Cress., Texas.
350 **stearnsi** Ckll., So. Cal.
351. **suavis** Cress., Colo.
352. **tenuitarsis** Ckll., Arizona.
353. **tepaneca** Cress., Mexico.
354. **tepida** Cress., Nevada, Calif.
355. **texana** Cress., Tex., Colo.

356. **thelypodii** Ckll., Organ Mts., N. Mex. (fls. *Thelypodium*).
357. **townsendi** Ckll., N. Mex.
358. **trifasciata** Cress., Porto Rico, Jamaica.
(? ♀ of *mimica*.)
359. **trifasciatella** Ashm., St.Vincent.
360. **trinodis** Rob., Ill. (fls. *Compositæ*).
361. **tristis** Ckll., New Mexico, Ariz., Chih. (fls. *Ipomœa*, *Peritoma*, etc.).
361*a* **malvina** Ckll., Chih. (fls. *Malvaceæ*).
362. **variabilis** Rob., Ills.
363. **vernonensis** (Viereck), British Columbia.
364. **vernoniæ** Rob., Ill. (fls. *Vernonia*).
365. **vernoniana** Rob., Ills.

Macroglossapis Ckll.

366. **albilabris** (Cress.), Mexico.
367. **analis** (Lep.), Mex.
oribazi *Rads.*
368. **modesta** (Smith), Oaxaca, Mex.
369. **montezuma** (Cress.), Mexico.
370. **rubricata** (Smith), Oaxaca, Mex.

NOTES.

(1) *Euthyglossa* Rads. is omitted, as Friese states that it is *Osiris*.

(2) *Eusynhalonia* Ashm., type *Synhalonia edwardsii* (Cress.), does not seem to be a valid genus.

(3) *Meliturgopsis* Ashm. is too near *Emphoropsis* ; and its type species is at present nameless, or rather, named only in MS.

(4) *Epimelissodes* Ashm., for *Melissodes atripes* Cress., is a group which I should like to recognize; but at present I do not know how to precisely limit it.

(5) *Peponapis* Rob. should not be separated for *Xenoglossa*, I think. Its type is *X. pruinosa* (Say).

(6) *Amegilla* Friese, I do not separate from *Anthophora;* neither do I separate *Anthemœssa* Rob. (type *abrupta* Say). These should perhaps rank as subgenera.

(7) *Diadasiella* Ashm. I do not separate from *Anthophorula.*

(8) *Eucera* Scop. is European. *E. maculata* Lep., if correctly placed generically, is probably wrongly attributed to North America. It was based on a ♀ from the Dejean collection. It had the head black haired; thorax red haired above, beneath and at sides black haired; sides of apex of abdomen covered with blackish red hair; venter ciliated with ferruginous; wings hyaline, nervures fusco-rufous; femora black, tibiæ and tarsi ferruginous. Evidently this must be a striking insect. In former times it was not customary to put locality labels on insects at the time of capture, if at all, and errors were not uncommon. Thus *Apis bostoniana* Sulzer (for a copy of the description of which I am indebted to Mr. Titus) is supposed to be American, and from Boston ; but the description and figure clearly indicate the European *Bombus hypnorum.*

(9) *Trachina* Klug (for which I take *Centris longimana* as type) would be considered by many a homonym of *Trachinus* L. *Gundlachia* was suggested by Cresson in 1865 for *C. cornuta* (which Friese, 1902, says is *difformis*), but this name is a homonym, and was replaced by *Heterocentris* Ckll. Later, Friese proposed *Rhodocentris* to include all the species with red or reddish abdomen, his first species being *difformis*. For the present, I treat *Heterocentris* and *Trachina* as distinct subgenera.

(10) *Hemisia* Klug, included two species of *Cyanocentris* and one *Trachina*. I restrict it to the former, taking *hæmorrhoidalis* as type.

(11) *Fiorentinia* D. T. (*Epeicharis* Rads.) is *Tetrapedia*. Type *T. mexicana* (Rads.)

(12) *Exomalopsis cubensis* Spinola, is omitted, being practically a nomen nudum.

(13) *Anthophora domingensis* Lep., is given by Smith as from S. Domingo, but according to Dours it is really from Senegal. (♀ 12 mm. long, face as in *A. 4-fasciata*, hair of thoracic dorsum, etc., red, mixed with black).

(14) *Anthophora holosericea* Fab., from the West Indies, is unknown to day, and of uncertain generic position. Jurine referred it to *Trachusa*.

(15) *Anthophora rufozonana* Dours, is evidently a misprint for *rufozonata*, as the latter rendering appears in the table at the beginning of the book, and also in the index.

(16) Dr. Ashmead assures me that the S. American *Ancycloscelis* seen by him is *Diadasia*. The only species seen by me represents a genus distinct from *Diadasia*. The genus is attributed to Latrielle, 1825, but apparently the first species actually described was *A. ursinus* Haliday, 1836, and this, I suppose, must be taken as the type. As I have never seen *ursinus*, I do not feel at liberty to assume that it is a *Diadasia*.

(17) *Tetralonia* Spinola, was based on Palæarctic forms. Spinola's species included *T. basizona* from Egypt, etc. The name was to replace *Macrocera* Latrielle (type the European *malvæ* Rossi), which is a homonym. The maxillary palpi are generally stated to be 5-jointed (cf. Ashmead, Patton, etc.), but I have examined *T. ruficollis* from Algeria (one of the species originally placed in the

genus by Spinola), and find the palpi 6-jointed. The male of *ruficollis* also has two raised laminæ or keels on the last ventral segment, as in some of our species of *Synhalonia*. It also appears that Latrielle, in his original account of *Macrocera*, said the maxillary palpi were 6-jointed, though the sixth joint was not very noticeable. I am quite unable to see that *T. ruficollis* Brullé, and *T. lucasi* Gribodo (the only Palæarctic species I possess) are not veritable *Synhalonia* and I therefore substitute *Tetralonia* for *Synhalonia* in the check-list. It follows from the above that *Tetralonia* is not the proper name for *T. gabbi* and kindred species referred there by American authors. These insects really do appear to have 5-jointed maxillary palpi, and the general appearance is not that of *Synhalonia*. Their affinity is rather with *Xenoglossa*, and with *Svastra* Holmberg, which Ashmead makes a synonym of *Xenoglossa*. In the maxillary palpi, *Svastra* resembles rather that group or subgenus of *Xenoglossa* which Robertson has named *Peponapis*, not typical *Xenoglossa* of Smith ; but I hardly think that these should be generically separated. The palpi of *Tetralonia exquisita* differ from those of *Svastra* in the longer terminal joint, and the shorter second joint. All things considered, I think it best to refer *T. gabbi* and its allies to *Xenoglossa* in the check-list, with the remark that they may hereafter prove separable.

(18) *Synhalonia fuscipes* (Rob., 1900) becomes a homonym, because of *Tetralonia fuscipes* Moraw, 1894. It is not given a new name, however, because it is very likely the female of *S. illinoensis*.

(19) The Pennsylvania record of *Cemolobus ipomœæ* (Rob.) is based on a specimen from Lehigh Gap, collected in 1902 by Mr. Rehn.

(20) The Maine record of *Melissodes perplexa* is from Mr. Lovell.

(21) The tribe Entechniini is separated on the peculiar mouth-parts.

APPENDIX.

Melissodes glenwoodensis Ckll.

Maxwell City, New Mexico, at flowers of *Grindelia*, September 2, 1899 (Miss S. L. Mize). New to New Mexico. The smooth parts of the abdomen in this species (♀) have a distinct metallic lustre, with greenish and purplish tints. This reminds one of *Florilegus condignus*, and upon comparison, I believe that *glenwoodensis* really is related to *condignus*, differing principally in the strongly plumose scopa of hind tibia, and the color of the hair on the hind legs and thorax above. This tends to break down the validity of *Florilegus*.

Melissodes blakei Ckll.

Tularosa Creek, New Mexico, at flowers of *Chrysothamnus graveolens glabrata*, October 4th (Cockerell). This differs from the type in the broader abdominal bands (more as in *mizeæ*), and the flagellum black, with only a few obscure reddish dots beneath. The form of the abdomen agrees with *blakei;* so also the venation, etc. I am rather disposed to think that *blakei* will prove to be a mountain race of *mizeæ*, although the types certainly look like different species. Although the type of *M. blakei* was taken in the Canadian Zone, the new specimen, with flower record, indicates that it belongs more properly to the Transition Zone.

Melissodes hortivagans Ckll.

So far as I can make out from the description (and it seems quite adequate) *M. variabilis* Robertson is the same. Both were published in 1905—*hortivagans* in June, *variabilis* in October. *M. hortivagans* goes far south, as is shown by a female before me captured by Mr. Wilmon Newell at Keatchie, Louisiana, June 14, 1905.

Melissodes thelypodii Ckll.

I have a ♀ from Las Cruces, New Mexico, at flowers of *Ipomœa mexicana*, collecting pollen (the large grains are entangled in the tibial scopa), August 25th (Cockerell). The specimen is somewhat smaller than the type (width of abdomen 5 mm., 5½ in the type), but otherwise identical. The affinities of the insect are with *M. tepaneca* and *M. galvestonensis*, but it is larger and more robust than these.

Melissodes texana flaveriæ n. subsp.—♀. Length about 14 mm.; width of abdomen about 5½, length of anterior wing 11½ mm. Black, with mostly pale ochraceous hair, but bands on abdominal segments 2–4 white, those on 2 and 3 interrupted (widely on 2), and oblique; scutellum fringed with black hair; hair on inner side of basal joint of hind tarsi, and most of that on inner side of their tibiæ, clear ferruginous; no black hair on vertex; hair of labrum pale yellowish; flagellum, except basal joint, red beneath; eyes silvery grey, tinted with sea green; tegulæ deep rufous; wings pale smoky, especially the broad apical margin, the costal region strongly yellowish; second submarginal cell very large and broad, receiving the first recurrent nervure some distance from the end; hair of pleura entirely pallid, with an ochreous tint; hair of fifth abdominal segment pale purplish sooty in the middle, but broadly pale ochraceous at the sides.

Agrees with *M. texana* in the general structure and appearance, markings on second and third abdominal segments, light hair in scutello mesothoracic suture, etc. It differs from *texana* in being less robust, with the hair of the ventral surface of the abdomen pale reddish (dark in *texana*), the hair at sides of fifth abdominal segment, which is much darker and redder in *texana*, the largely blackened femora (wholly deep red in *texana*), and the greenish eyes (light reddish grey in *texana*). It is also allied to *M. machæranthereæ*, which has the same pattern on the abdomen, and the same colored hair on the hind legs, but is larger than *flaveriæ*, with a red scape and partly red clypeus, broader and flatter scutellum, etc. These are, however, strictly of the same group.

M. martini, on the other hand, differs entirely in the pattern of the abdomen, and is not allied. In Robertson's table, *flaveriæ* runs to *M. coloradensis*, but it differs from that species in the general color of the pubescence, the shorter third antennal joint, the larger red tegulæ, etc. Except for the lack of black hair on the vertex, *flaveriæ* runs in my tables to *Florilegus condignus*, from which it differs in the scopa of the hind tibiæ being large and profusely plumose; the hind middle of mesothorax rather densely, uniformly covered with small but distinct punctures (with no sign of the bare space of *condignus*); and the much smaller and closer punctures of the upper part of the clypeus. Nevertheless, *flaveriæ* and *condignus* are very much alike superficially, and seen by the naked eye at the distance of about a foot, especially from behind, they could readily be taken for the same species. The first abdominal segment of *flaveriæ*, in certain lights, shows distinct metallic tints on its broad base apical margin—a further indication of resemblance to *condignus*.

Hab.—Roswell, New Mexico, at flowers of *Flaveria angustifolia*, auctt., end of Augnst or first of September (Cockerell). At the same time and place, the *Flaveria* was also visited by the beautiful *Nomia nortoni* Cresson.

Melissodes nigrosignata Ckll.

My wife collected two specimens near San Ignacio, New Mexico, August 15, 1899. These were unfortunately overlooked, and the species was later described from material collected by Snow in Arizona.

Melissodes pallidicincta Ckll.

A new locality in Gibson, New Mexico, September 30th (Anna Gohrman).

Melissodes atripes Cresson, var. **acomanche** n. var.

♂. Like the male of *atripes*, but scutellum with much brown-black hair, and hair of hind femora and tibiæ dull reddish instead of black; that at apex of abdomen also more or less pallid. This is a form of *atripes* in which the hair of the hind legs become pale and reddened, while as if in compensation, dark hair appears on the scutellum. Not unnaturally an eminent authority on bees had labelled it *M. comanche*, but the lively ferruginous of the hair on the hind legs of *comanche*, especially that of the tarsi (which in *acomanche* remain black), is entirely different, and the end of the apical plate of the abdomen is broader in *acomanche*. From *M. caliginosa*, *acomanche* is easily known by the light reddish hair of the pleura, that of *caliginosa* being black. There is no doubt that *atripes* and *comanche* are closely allied, and it is possible that *acomanche* is a hybrid between them.

Hab.—Fedor, Texas, June 11, 1896 (*Birkmann*).

Melissodes melandri n. sp.

♀.—Runs in my tables nearest to *M. raphaelis*, having, like it, the hair of the pleura partly black and partly light. It is a species of the stature and general appearance of *M. communis* Cress., from which it differs as follows: Flagellum darker; hair of occiput black; hair of mesothorax all black, except a slight admixture of greyish white along the extreme anterior margin, not easily noticed, and a little tuft of whitish at the posterior corners; hair of pleura black with some white intermixed, more white below ; wings smaller and not reddish ; stigma darker; hair of anterior and middlelegs darker, that on inner side of basal joint of hind tarsus brown-black ; abdomen rather longer, with less light hair, median bands on segments 2 and 3 somewhat oblique, that on 3 much narrower, and almost failing in the middle, while 4 has the white bands only distinct laterally ; hind margin of first segment with only the almost imperceptible edge pallid ; hind margins of first four ventral segments broadly dark rufous. Hair of face white ; some black hair on each side of antennæ; hair of metathorax white, of scutellum black ; tibial scopa abundant, very strongly plumose, pale reddish.

Hab.—Fedor, Texas, Oct. 4, 1899 (*Birkmann*). Named after Mr. A. L. Melander, in recognition of his work on the insects of Texas.

Melissodes bruesi n. sp. (*petalostemonis* var.?)

♀—Runs in my table to *M. tepaneca* Cr., and *galvestonensis* Ckll. From both of these it is easily known by the third abdominal segment having a narrow straight transverse median light hair-band, whereas in *tepaneca* and *galvestonensis* the whole base of the segment is covered with light hair, and the lower edge of this hairy region is conspicuously concave. The hair of the thorax above in *bruesi* is neither so dense nor so brightly colored as in the other two species. The new species has the general stature and appearance of *M. communis* Cress., from which it differs thus: hair of thorax above reddish, without any black, that on scutellum rufo-fulvous ; head somewhat broader ; tegulæ a lively red ; wings rather paler ; band on third abdominal segment about or hardly half as wide ; black hairs as sides of base of fourth longer. The median bands on segments 2 and 3 are not at all oblique ; the subbasal area on 2 is distinctly punctured. Hind margins of ventral segments 2 and 3 broadly red.

Hab.—Fedor, Texas, May 5, 1902 (*Birkmann*). In addition to the type, there are four other specimens ; the species flies as late as June 12. One of the specimens is marked October, but it is much rubbed, and the hind margins of the abdominal segments are broadly reddened ; the disc of the mesothorax, which in the type is shining and sparsely punctured, appears to be much more closely punctured in this example, but the pin has destroyed the part which is most characteristic. It is very possible that this autumnal example indicates another species, but if so, it cannot be defined without better material. Named after Mr. C. T. Brues, who has done good work on Texan bees.

In Robertson's table, *M. bruesi* runs nearest to *M. petalostemonis* Rob., but the bare patch on segment 4 is much elongated transversely, and the vertex carries some dark hairs. It may be that *bruesi* is a form of *petalostemonis*, but Robertson's account of the latter is very brief, and the statements in his table (1905) do not wholly accord with his original description (1900). From the name, it is inferred that *M. petalostemonis* visits *Petalostemon*, and is therefore probably a species flying in July and August.

Melissodes wheeleri n. sp.

♀. In my tables runs to *M. communis* Cress., which it resembles in size and appearance, differing, however, as follows: hair of labbrum lighter, fulvous at apex; area behind ocelli with a large amount of black hair; eyes reddish (green in *communis*); patch of black hair on mesothorax much larger, extending forward at anterior corners; wings practically clear (very smoky in *communis*); subbasal area on second abdominal segment practically impunctate; median band on third segment narrower; fourth segment with no bare patch, but the hind margin covered with black hair. The light hair is white, not at all ochreous; the hair of the pleura is pale throughout, except a few hardly noticeable dark hairs just under the wings. The ventral surface of the abdomen has dark fuscous hair.

Compared with *M. hortivagans*, it is easily known by the smaller size and color of the thoracic hair. From *M. humilior* it differs conspicuously by the light ferruginous scopa of hind legs, much greater amount of black hair on thorax, etc. In Robertson's table it runs to *M. boltoniæ*, but differs by the greater amount of black hair on anterior part of thorax, and the second abdominal segment not distinctly punctured between the bands. The median band on the second segment is broken in the middle, but the parts are not distinctly oblique as they are in *M. perplexa*.

Hab.—Fedor, Texas, May 23, 1902 (*Birkmann*). Named after Dr. W. M. Wheeler, in recognition of his work on the insects of Texas.

Melissodes wickhami n. sp.

♀. Length about 13 mm., the abdomen being rather long. In my tables it runs to *M. communis* and *hortivagans*, but it is quite distinct from these. From *hortivagans* it differs at once by the narrower form (especially the abdomen), the abdomen much less distinctly banded, the tibial scopa of hind legs much less abundant, etc. At a glance the abdomen appears to be one-banded, thus recalling *M. epicharina*, but the single distinct band is at the base of the second segment, and is white. The color of the thoracic hair is also strongly suggestive of *epicharina;* but the wings are paler than in that species, the tibial scopa is less abundant, and there are various other differences. From *M. communis* it is at once separated by the appearance of the abdomen.

Eyes pale reddish-grey; flagellum scarcely reddened beneath; vertex with much black hair; thorax above with greyish-white hair, the hind part of mesothorax, and the scutellum, bare, shining, with strong punctures; the hind borders of scutellum with black hair, and the hair on mesothorax posteriorly suffusedly blackish, but there is no well-defined black patch; hair of pleura, under part of thorax and mesothorax dull white; tegulæ shining piceous; wings only moderately dusky, stigma and nervures piceous; hair of legs pale, scopa of hind legs scarcely yellowish; hind margins of abdominal segments 1 to 4 testaceous; subbasal area on 2 with distinct but sparse punctures; median band on 2 very faint, slightly oblique, interrupted medially; 3 and 4 greyish from a fine covering of pale hair, the bands evanescent; no bare space on 4; 5 and 6 with black hair; hind margins of ventral segments very broadly ferruginous.

Hab.—Fedor, Texas, May 3, 1899 (*Birkmann*). Also one taken May 10. Named after Mr. H. F. Wickham, who has made important contributions to the entomology of Texas. In Robertson's table this runs to *M. vernoniæ*, but differs by the red hair on inner side of hind tarsi, and various other characters. *M. vernoniæ* is an oligotropic visitor of *Vernonia fasciculata*, and so cannot be a spring species.

I can hardly put forward four new species of the group of *Melissodes communis* without some sort of explanation or apology. At first sight, one would readily suppose *M. communis* to be indeed a very common, widespread and variable insect. This was the earlier interpretation of it; but Robertson, who has very carefully studied the subject in Illinois, finds it possible to separate a number of species which are oligotropic, and doubtless of more or less local occurrence. I have formerly separated others, and the present indications are that the southern states, east of the 100th meridian, are very rich in insects of this group, the several species being attached to different genera or families of plants, especially Compositæ. If this view is correct, there is in the south a very rich field for investigation, which will yield results of great interest if the insects are collected in adequate series, and their flower-visiting habits recorded.

In order to make the identification of the above four species easier, a special table is presented:—

FEMALES.

Hair on inner side of basal joint of hind tarsi black or fuscous (dark red in *raphaelis*) ....1.
Hair on inner side of basal joint of hind tarsi ferruginous (dark in *raphaelis*)...6.
1. Thorax without black hair above; size rather large (Colo.) **glenwoodensis** Ckll.
Thorax with conspicuous black hair above ....2.
2. Hair of middle of front of mesothorax black, of pleura largely black. **melandri** Ckll.
Hair of middle of front of mesothorax pale..............................3.
3. Comparatively large species, of Colorado..................**mysops** Ckll.
Smaller species, of the S. and E. States, and E. Mexico ....4.
4. Hair of thorax in front ochreous, this extending about as far back as front of tegulæ (Elkhart, Indiana, from Mr. Lovell).......**simillima** Rob.
Hair of thorax in front greyish-white, this not extending so far back; first abdominal segment with green and purple tints ....5.
5. Facial quadrangle about square; flagellum scarcely reddened beneath (Georgia; cotype).................................**perplexa** Cresson.
Facial quadrangle conspicuously broader than long; flagellum strongly reddened beneath (Mexico) ....**raphaelis** Ckll.
6. Thorax without dark hair above; tegulæ and flagellum beneath red. **bruesi** Ckll.
Thorax with dark hair above ....7.
7. Subbasal region of second abdominal segment not obviously punctured; wings hyaline, not smoky or reddish; the whole apical margin of fourth abdominal segment with black hair ....**wheeleri** Ckll.
Subbasal region of second abdominal segment obviously punctured, especially at sides; apical margin of fourth abdominal segment with light hair, except perhaps in middle.......................................8.
8. Scopa of hind tibiæ thin, little plumose; abdomen longer..**wickhami** Ckll.
Scopa of hind tibiæ thick, strongly plumose; flagellum red beneath........9.
9. Hair of pleura entirely pale (Georgia; cotype)........**communis** Cresson.
Hair of pleura black, with some white intermixed (Mexico). **raphaelis** Ckll.

Melissodes microsticta Ckll.

The range of this species is greatly extended by a ♂ from Colorado in the Cresson collection. It shows rather more abundant black hair on the upper part of head and thorax than does the type, but otherwise agrees.

Melissodes autumnalis Rob.

A ♀ from Fedor, Texas, November, 1903, is exceedingly like *M. cnici*, but differs by the longer and more abundant hair of thorax above; the hair of occiput light, while that of vertex is entirely black (thus reversing the condition in *cnici*); hair of cheeks partly light and partly dark, but mainly light; mouth-parts smaller and weaker in every way. The abdomen is quite without bands. This agrees so nearly with Robertson's brief diagnosis of *M. autumnalis*, that I suppose it to be the same. It was collected by Mr. Birkmann.

Tetralonia annæ n. sp.—♀. Length about 13 mm.; width of abdomen 5; length of anterior wing about 8½. Black, the head and thorax with greyish white hair; antennæ black, but the first few joints of the flagellum appear somewhat reddish, from a very fine reddish pile or tomentum; eyes reddish grey; malar space distinct; mesothorax dullish, with conspicuous but not deep punctures; tegulæ rufous, darker in front; wings slightly dusky; hair of anterior tarsi and middle tibiæ reddish fuscous; of middle tarsi and hind tibiæ and tarsi more orange, but ferruginous within; hind tibiæ and basal joint of tarsi broad, the scopa consisting of coarse bristles; hind spurs normal; abdomen with broad bands of pale grey or greyish white (not in the least yellowish) tomentum on segments 2 to 4; segment 5, like those before it, is black at base, but the broad fringe is fuscous for the middle third, with the outer thirds white, the white overlapped by a few dark hairs.

In my tables this will run in the neighborhood of *T. cressoniana*, *actuosa* and *donata*; or except for its size, near to *speciosa*. These species are easily separated as follows:

Mesothorax with erect fuscous hair.................................**donata** (Cress.).
Mesothorax without such hair.................................1.
1. Length much over 15 mm.................................**speciosa** (Cress.).
Length less than 15 mm.................................2.
2. Hair of thorax above fulvous; abdominal bands not *very* broad; base of second segment covered with white tomentum..**cressoniana** (Ckll.).
Hair of thorax above not fulvous.................................3.
3. Smaller; mesothorax dull without obvious punctures; bands of abdomen not especially broad; base of second segment with inconspicuous pale hair.................................**actuosa** (Cress.).
Larger; mesothorax distinctly punctured; bands of abdomen very broad; base of second segment covered with black tomentum.......**annæ** Ckll.

T. annæ differs from *belfragei* by the smaller size, much narrower apical plate of abdomen, abdominal bands not brilliant white, color of hair on outer side of hind legs, etc.; from *cordleyi* by the much smaller size, sculpture of mesothorax, etc.; from *truttæ* by the broad abdominal bands, more pointed apical plate, color of hair of thorax, etc. The mandibles have a depressed ferruginous spot just before the apex.

Hab.—Gibson, New Mexico, Sept. 15, 1905. (*Miss Anna Gohrman*).

Miss Gohrman also sends *Anthophora montana* Cress., from Gibson, collected on the same day. The locality is near Gallup, in a region whence no bees have hitherto been obtained.

Tetralonia lepida (Cresson).

A brightly-colored ♂ from Texas (Cresson coll.) is so like the ♀ *T. cressoniana* (except for the usual sexual differences) that it is difficult to believe that they do not belong together. The pubescence, including the abdominal bands, is quite the same. However, the differences in the sculpture of the thorax and the marginal cell, mentioned in my original account of *cressoniana,* remain valid. It seemed unlikely that these differences could be sexual, or due to individual variation, but I now consider the validity of *cressoniana* somewhat doubtful, in the absence of more material.

Tetralonia gillettei (Ckll.).

The range is greatly extented by a ♂ found by Mr. Birkmann at Fedor, Texas, May 17, 1904. The wings are not so reddened as in the type, and there is a small supraclypeal mark.

Xenoglossa pruinosa (Say).

Lee Co., Texas, June (*Birkmann*). New to Texas.

THYGATER Holmberg.

Through the kindness of Dr. F. Ameghino, I have just received a copy of Holmberg's work, "Delectus Hymenopterologicus Argentinus," and I find that *Thygater* is the same as *Macroglossapis,* having *M. terminata* (Sm.) for its type. A second species is *Macroglossapis chrysophora* (*Thygater chrysophora* Holmbg.). For some reason which I do not understand, Holmberg on p. 385 cites *Thygater* as having been published in his paper in Actes Acad. Cordoba, 1884, p. 133, although on p. 506 he states that it is a new genus. If it had really been published in 1884, it would of course have priority over *Macroglossapis;* but while I do not possess the earlier paper, I saw it at the British Museum and made careful note of its contents, while my wife made copious extracts, and copied several figures. We found no description of *Thygater* whatever, nor did Dalla Torre, who cites all the species in this paper in his catalogue. Schrottky also, in his catalogue of Argentine Hymenoptera (1903) has no *Thygater*, though he cites Holmberg fully; and there is no allusion to the genus in Index Zoologicus.